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Selling Homes to Workmen at Cost

Amortization Basis of Selling Plan—Precaution Against Speculation—Other Welfare Activities of Clark Equipment Co.

Homes for Employees of Clark Equipment Co. at Buchanan, Mich.

FOR the welfare of its workers, the Clark Equipment Co., Buchanan, Mich., manufacturer of drills and precision tools of steel made in the electric furnace, has developed an industrial housing plan intended to avoid any hardships or speculation on the part of its employees. A description of the plant itself appeared in THE IRON AGE of Jan. 11, 1917. Primary considerations taken into account in this work were: To prevent crowding because of too narrow lots which often make for poor light and ventilation and do not sufficiently provide for clothes line, vegetable garden or garage space; to avoid the absence of a personal touch in the design of the houses due to too much similarity or standardization, when the occupants had no voice in the planning; to prevent the erection of houses according to too expensive a plan, such as five-coat enamel, highest grade plumbing fixtures, etc. It was found in this connection that purchasers are often tempted to select a more expensive house than they are able to pay for, so that after enthusiasm lags, the buyer is liable to back out of his contract.

With a view to reducing its labor turnover, the company made one of its important qualifications for participation in its housing, the selection of intelligent and law-abiding workmen. It was

found on summarization of a questionnaire submitted to its employees, that the most workable plan consisted in the incorporation of the principle of amortization in paying off the investment on the houses.

To the actual cost of the plot was added 100 per cent. and to the cost of the house 5 per cent. with the intention of heading off speculators. At the expiration of about five years, this excess valuation is applied to the credit of the purchaser, provided that he has continued his payments. The initial payment was fixed variously, according to the means and earning power of the purchaser, averaging about 10 per cent. of the value of the property; and installment payments were set at about 1 per cent. per month.

The cost of house and lot varies from about $1900 for the smallest, to about 4500 for the largest. The initial payments run from $180 to $400 averaging about 10 per cent. of the cost as stated.

To date the company has erected a total of 44 houses, classified as follows:

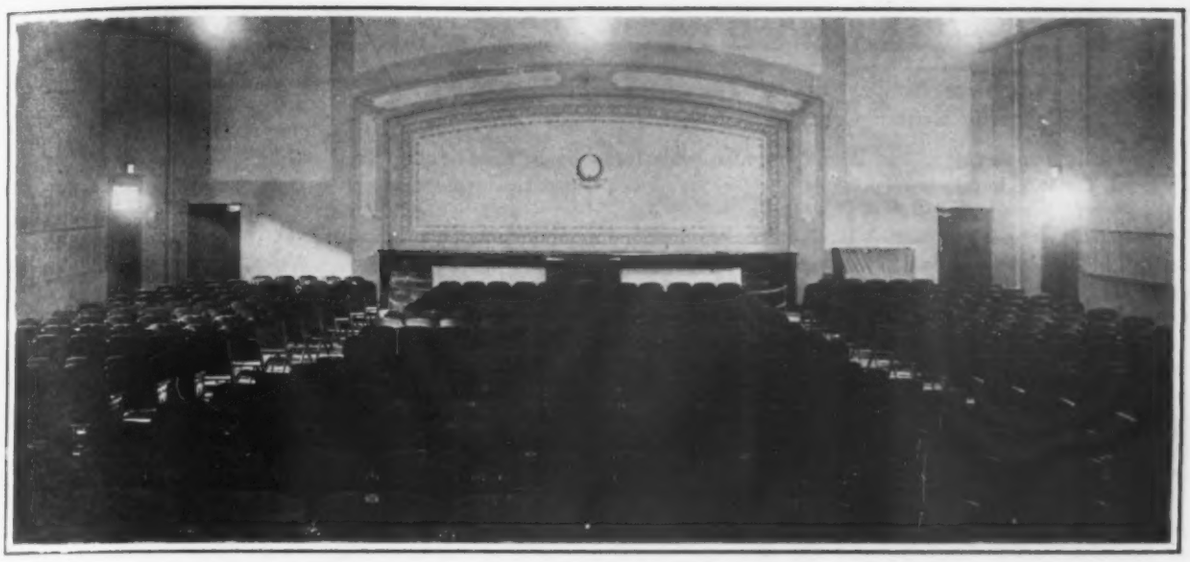
1 boarding house, containing 10 bedrooms, living-room, dining-room, kitchen, storeroom and two bathrooms.
6 one-story houses, containing living-room, dining-room, kitchen, three bedrooms and bathroom.
8 one-and-one-half story houses, containing living-room, dining-room, kitchen, three bedrooms and bathroom.
6 one-story houses, containing living-room, dining-room, kitchen, two bedrooms and bathroom.
10 two-story houses, containing living-room, dining-room, kitchen, three bedrooms and bathroom.
3 one-and-one-half-story houses, containing living-room, dining-room, kitchen, two bedrooms and bath.
1 two-story house, containing living-room, dining-room, kitchen, four bedrooms and bathroom.
9 one-story houses, containing combination living- and dining-room, kitchen, two bedrooms and bathroom.

All the houses have cellars and are heated by hot-air furnaces, except five one-story houses which are stove heated. Electric lights, cold and hot water and all modern conveniences are supplied; the streets and sidewalks are also paved.

To date all contracts for the purchase of homes have been carried along without lapse. All payments go to reduce the debt and do not constitute rent. The payment does, however, include interest on the capital invested in the house at the rate of 6 per cent. per year.

Two years ago the company made a medical survey of the hospital and medical facilities of Buchanan and decided that more adequate equipment should be provided. A year ago a large dwelling located on a high bluff overlooking the company's park-like plant was purchased as a hospital. After extensive alterations and additions the building has just recently been turned

A Private Room and Ward in the Works Hospital



Employees' Theater, Which May Be Used for Dancing and Other Social Affairs

over to the company by the architects and contractors.

The Clark Hospital, as it is known, contains private rooms and several wards having a number of beds each, 12 beds in all. There is an x-ray room, also sterilizers, and laboratory equipment, an operating room, and quarters for the staff of resident nurses.

While it is intended primarily for use of employees, the hospital is open to citizens of the community at cost. The use of the hospital is not restricted, the physicians of the community being at liberty to use its facilities for the care of urgent strike cases.

It is located between the employees' sub-division and the company's plant—ideally situated to care for emergency accident cases, epidemics such as the "flu," as well as to care for maternity cases in the families of employees and local residents. Abundance of fresh eggs and vegetables are available from the hospital's own garden and poultry yard. The operation of the hospital is directed by the Clark Hospital Association, a volunteer organization of employees and residents.

In connection with its housing developments, the company has built an employees theater in which the seats are removable and folding, so that the floor may be cleared and used for dancing. It is interesting in this connection, that the workers refused to patronize free performances for which the company hired the talent; but readily paid for admission in the usual fashion, and also attended enthusiastically performances in which the employees themselves were the actors.

Enhancement has been given to the surroundings at the plant by the creation of a park on which are located a number of the buildings, including the theater and greenhouse, so that the workers are under the maximum influence of fine surroundings in their work.

Molten Spiegel in Open-Hearth Tar and M[illegible] Practice

In the July issue of the *Industrial Bulletin* of the Colorado Fuel & Iron Co., Denver, Colo., Frank Ferguson, employ[illegible] representative of the open-hearth furnace department, contributes a description of the molten spiegel plant and of tar instead of gas in the furnaces: In speaking of improvements he makes the following statement regarding the use of molten spiegel: spiegel plant was put into operation on Aug. 5, it being the third installation of its kind in this country. The basic idea of the process is to melt down alloy of a constant chemical analysis that is carried on the open-hearth pit in a molten state and added to the steel as it runs into the steel ladle from the furnace proper, thereby practically eliminating the practice of "off grade" high carbon or rail heats, and making for a more uniform manganese in the finished steel and less variation in both the carbon and manganese from heat to heat.

It is also more economical and has increased the efficiency of rail-melting practice fully 10 per cent, the month of April of this year being the best month the department ever had on rail steel, when it made 93 per cent good rail heats.

The use of tar in the open-hearth furnaces went into effect July 18, 1918. As a comparison between gas and tar, producer gas comes into the furnace as a big full bodied flame, by the pull of the stack on 40 to 60 lb. of steam pressure at the gas house while tar makes a thin, light flame delivered into the furnaces under terrific pressure. The tar comes through the lines at 80 lb. pressure, while at the furnace where the tar goes into the burner or "gun" it is broken up under 50 lb. steam pressure.

Tar makes a much hotter flame than producer gas, therefore the tonnage is increased, but being so much hotter than gas, the furnace burns out quicker. From an economical standpoint, the comparison of one tar furnace and one gas furnace the advantage is slightly in favor of the tar furnace.

The main advantage of tar is in using it on the furnaces every week when the gas sewers are burned out, thereby keeping it in operation instead of shutting down for 12 hr. once a week; also in using it on a furnace that it is impossible to run with gas. As an illustration, a short time ago the south end of No. 11 furnace fell in, completely blocking the slag pockets and checker-chambers making it impossible to run the furnace under those conditions with gas. Tar was put in the furnace and it ran three weeks and four days and made comparatively good time.

Examinations for plant engineer at $3000 to $3600 a year and for junior physicist at $1500 a year are announced by the United States Civil Service Commission, Washington. For plant engineer applicants must be graduates of a common school with 12 years' engineering experience, high school with 10 years' experience, or college with 8 years' experience. For junior physicist, graduation from a college with one year's experience in fuel-gas analysis and high temperature measurements is required. Applicants should apply for form 1312, stating the title of the examination desired.

DUMPING OF FERROMANGANESE

American Producers Make Further Statements Regarding British Competition

In a supplementary bill of complaint filed with the Federal Trade Commission on Sept. 2, American producers of ferromanganese state that their British competitors will drive them out of business unless prompt and effective action is taken to prevent the alleged dumping of the British product in this country at prices said to be below the cost of production.

The original bill of complaint, which was filed on Aug. 27, was published in full in THE IRON AGE of Sept. 4, page 680, and named as defendants the British manufacturers and their American agents, who are Crocker Brothers; Rogers, Brown & Co.; Frank Samuel and C. W. Leavitt & Co.

The supplementary bill states "that on Aug. 29 the American representatives of the British manufacturers of ferromanganese were advised by cable from said manufacturers that the price of 80 per cent ferromanganese had been cut to $95 per ton, c.i.f. United States Atlantic ports." The complainants further aver that the American selling agents have been carrying out their instructions and are selling and offering for sale 80 per cent ferromanganese at the above reduced price. This has been done, it is stated, without change in the price in the English market, which is and has been £25 per ton.

The supplementary bill of complaint states that "unless prompt and effective action is taken to restrain the foregoing unfair trade practice of Messrs. Crocker Brothers, Rogers, Brown & Co., Frank Samuel and C. W. Leavitt & Co., the conspiracy to put your complainants and other American manufacturers out of business will prove successful, because the price at which such 80 per cent ferromanganese is being sold and offered for sale by such representatives of the British manufacturers is below the American cost of manufacture, and this business, which has been built up at great expense during the time of war, will be destroyed, and the American market will belong entirely to the British manufacturers."

Other supplementary bills of complaint, similar to the above, have also been filed by the Miami Metals Co., Chicago, and the Southern Manganese Corporation, Birmingham, Ala. The Seaboard Steel & Manganese Corporation, New York, has also filed a bill of complaint, which means that all of the American producers are now appealing to the Federal Trade Commission for aid.

C. W. Leavitt & Co. Deny Conspiracy

None of the American agents of British ferromanganese producers has made formal answer at Washington to the complaint of the American manufacturers, but C. W. Leavitt & Co., New York, representing the Carlton Iron Co. of England, has addressed a letter to THE IRON AGE denying that its firm is a member of any pool or conspiracy to raise or lower the price of ferromanganese. Their letter follows:

Referring to the charge of "dumping of British ferromanganese" noted in your issue of Sept. 4:

We admit that we are the United States agents for the Carlton Iron Co., British maker of ferromanganese, but we deny that our firm is or has been engaged in unfair methods of competition. Furthermore, our firm is not a member of any foreign or domestic pool either to raise or lower the price of ferromanganese.

We believe in and practice the square deal and do not seek a monopoly of the business, but the unwarranted complaint of certain domestic producers seems to invite a monopoly of this trade for their own account.

However, we do not believe that any government agency or the United States consumers will aid in that movement for a monopoly.

The action of the American companies has ag brought to the forefront the talk of a protectiv on ferromanganese. Several bills have been pr gain Congress, but no definite action has been t e tariff tariff also has been proposed on manganes posed in this will be opposed by the American man aken. A of ferromanganese, who would thus be i ore, but position than they are to-day. ufacturers n a worse

Unusual Explosions of Steel Cylinders Holding Compressed Gases

Two recent cases of explosions of steel cylinders while being charged, the one with hydrogen, the other with oxygen, are discussed at some length by W. Hempel, Hanover, Germany, in the *Zeitschrift des Vereines Deutscher Ingenieure* of March 8, 1919. The conclusion arrived at in both cases is that explosive gas mixtures were not responsible for the accident but that the steel gave way for reasons more or less cleared up.

The hydrogen cylinder burst while being charged with electrolytic hydrogen from a compressor when the gage registered 140 atmospheres; the full pressure was to be 150 atmospheres. The head and shell of the seamless cylinder remained perfectly intact but a hole was blown through the spherical bottom and 75 cm. deep into the floor on which the cylinder was standing. The cylinder was hurled through the roof of the building and buried itself in the earth, 85 m. away; the compressor was not damaged. Two men were badly burnt.

The mechanical, metallurgical and chemical tests of the head and shell of the seamless tube (9 mm. wall thickness) fully satisfied the regulations; the steel composition was: 0.49 per cent carbon, 1.00 per cent manganese, 0.38 per cent silicon, 0.032 per cent sulphur and 0.026 per cent phosphorus. The composition of the bottom varied very slightly from these figures, but there were segregations and local accumulations of sulphur. The bottom was cleft like a gaping mouth; half of the steel remained in position and whole, the other half was blown away and cracked. A fold seemed to have been formed near the center of the bottom on the inside from which a crack started; interna of the bottom, practiced in the case of probably have disclosed the fold or crack illumination shells, would

The second bottle was being charged from liquid air when the cylinder was b while the gage indicated between 80 a with oxygen pheres. Nobody was hurt, because the cy to pieces standing behind a strong brick wall, and 18 atmosmany fragments were recovered. In this case the was ous tests concordantly showed the material not to the been up to the standard. The composition was: per cent carbon, 0.97 manganese, 0.38 silicon, 0.0 sulphur and 0.033 phosphorus. The steel was imp fectly annealed and not sufficiently tough; the strengt was high, but the elongation low throughout; the dis position of the cracks and lines of fracture was in accordance with the assumption of a brittle material. The wall thickness fluctuated moreover between 6.8 and 10.8 mm. Hempel suggests that some crack had been formed previously, possibly by a fall of the cylinder, and that, as in the first case, it was not necessary to assume a real gas explosion as immediate cause of the accident. One crack had evidently started from one of the letters by which the finished cylinder had been marked.

The plant of the bankrupt Hamilton-Otto Coke Co., Hamilton, Ohio, will be sold at auction, 2 p.m. Sept. 17. The plant is two miles north of Hamilton and covers 11.78 acres appraised at about $385,340. The chattels, consisting of furniture, tools, cars, cranes, crushers, electrical equipment, coal, coke, clay, sand, brick, etc., are valued at about $72,767.

New Coke Plant of La Belle Iron Works

Method of Handling the Coal—Extensive Foundation Necessary to Bring Plant Above Flood Stage—Automatic Heating Control

THE by-product coke plant of the La Belle Iron Works is the first Koppers plant in the Pittsburgh district excluding Youngstown and the only modern plant of its kind in the Ohio Valley. It is located on the south bank of the Ohio River opposite the company's main plant at Steubenville, Ohio. The plant, which has two batteries, each of 47 standard Koppers 12½-ton ovens, is planned to permit duplication and replaces the beehive ovens formerly operated by the company at La Belle, Pa.

Foundation Work a Feature

It was the original plan of the owners to build the plant on the Ohio side of the river, adjacent to the Steubenville mill and furnaces, but the West Virginia site was decided upon when it was found impossible to secure enough land contiguous to the present plant to allow room for future expansion. The choice of the West Virginia site added considerably to the cost of the plant.

A great amount of extra foundation work was necessitated and a fill of 15 to 20 ft. over the entire site was required to bring the plant to an elevation above the flood stage of the river. The ovens themselves were carried eight feet above the new level in order to bring the stack flues above the flood stage. In excess of 900 yd. of filling material was placed on the site and more than 70,000 yd. of concrete was used in the construction of foundations. Void wall construction was used in the oven foundation which extends to a depth of 28 ft. below the oven matt, the voids being filled with granulated slag. Piers and curtain walls were used in the foundations of all the buildings and the floors laid on a granulated slag fill. All underground conduits and piping were laid before the fill was made, being erected on concrete piers.

To provide traffic communication between the two plants and insure an uninterrupted supply of fuel for the furnaces, it was necessary for the company to erect and maintain its own bridge across the river. This structure, which is of the cantilever type, is 1520 ft. in overall length and consists of four 100-ft. girder spans, two 30-ft. anchor spans and a main channel span of 660 ft. It was planned and built by the American Bridge Co., and is the first cantilever bridge ever erected without a traveler or creeper, a crane with 110-ft. boom being used in its erection throughout. The supporting piers are of reinforced concrete, 120 ft. high and were sunk to bed rock, a distance of 43 ft. below pool level, the caisson method being employed.

The By-Product Coke Plant of the La Belle Iron Works, with the Loaded Coal Barges in the River and the Coal Unloading Dock. The barges are moved along the dock electrically, the crane remaining stationary

The Coal-Handling System

A unique feature of the new plant is the coal-handling system. The coal, except a small percentage which is mined in the nearby West Virginia fields and brought to the plant by railroad, is transported over the Monongahela and Ohio rivers from the Pennsylvania coal district. For this purpose barges having a capacity of 350 to 600 tons are used, the barges being towed down the river in fleets of six to ten. Harbor facilities

are provided where approximately 30 loaded barges may be tied up awaiting their turn at the unloading dock, while the same number of empties can also be accommodated. A truck hopper handles the coal shipped in by rail and a storage yard of 100,000 tons capacity is provided to insure an adequate supply for use during the winter months when the river may be closed to navigation.

The coal is unloaded from the barges by two Heyl & Patterson traveling gantry cranes, with 100-ft. bridge. These cranes are each mounted on four two-wheeled trucks and travel over a 20-ft. gage track, so that they may also be used to handle coal in the stock yard. They are equipped with 3½-ton buckets and have a hoisting speed of 500 ft. per min. The buckets are specially designed with a view to clean unloading in minimum time with minimum labor.

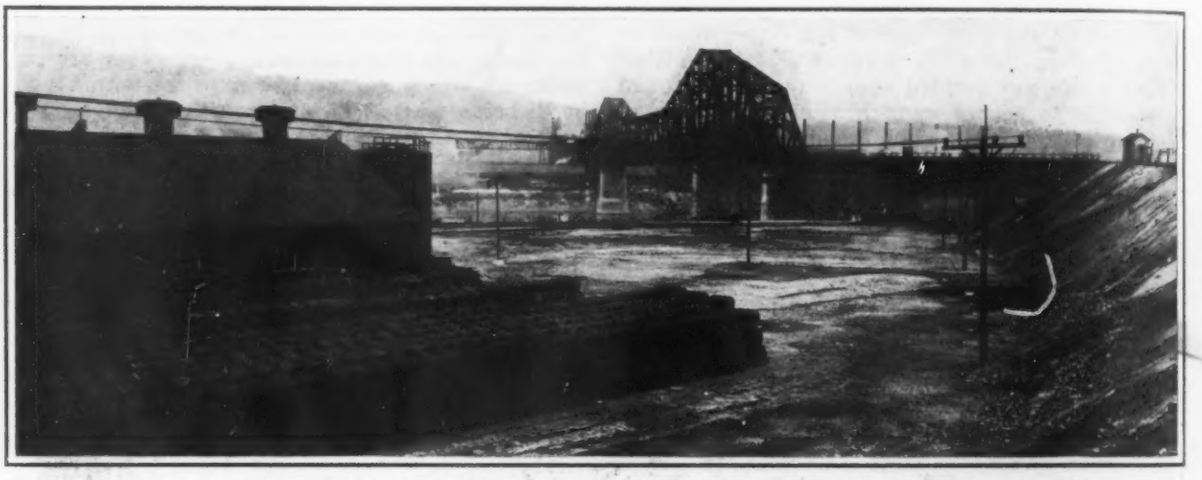
When unloading, the crane remains stationary on the dock, the barge being moved along the dock by an electrically operated barge shifter. Under normal conditions the coal is dropped into a small hopper located on the dock. It is then fed through the bottom of this hopper into a 30-in. conveyor belt which in turn discharges it into the track hopper. If it is desired to stock the coal from the river, empty cars are placed over the track hopper and the coal is discharged from the conveyor into them.

Loaded cars are moved by means of a cable haul to one of the several unloading pits which are located every 125 ft. along the entire length of the storage yard. From these pits it is transferred to the storage pile by one of the gantry cranes. When it is desired to use coal from stock this operation is reversed, the crane loading the cars which are then transferred to the track hopper and unloaded. The unloading dock, which is 100 ft. long and has a 100-ft. fender at each end, was built by the National Contracting Co., Cleveland, while the coal-handling and storage yard system was designed and built by the Heyl & Patterson Co.

From the track hopper, coal is carried by a short-length pan conveyor to a 36-in. conveyor belt which, driven by two 50-h.p. General Electric motors, travels on a 20-deg. incline to the top of the breaker building where it delivers the coal to a Bradford breaker. From the breaker which removes the slate and sulphur, the coal, having been reduced to 1½-in. lumps, is carried by a conveyor belt and discharged into the proper one of three mixing bins. From the mixing bins it is fed by gravity into the regulated and adjustable gates so that any desired percentage of each grade of coal can be secured. The three mixer belts discharge into the same chute which leads to the hammer mills where the coal is pulverized to a fineness of 85 per cent. through a ⅛-in. screen. It is then elevated by conveyor belts to the 1800-ton storage bin, located above the charging floor and between the two batteries of ovens. Robins conveyor belts systems are employed throughout.

The Interlocking Control System

The chutes on either side of the hammer mills are equipped with rotary feeders which insure an even and constant feed and eliminate about 90 per cent of the dust which is so common about coal-handling plants. All the coal-handling equipment is individually motored and the control is interlocked in such a way that no conveyor belt or crusher can be started or operated until the machine next in progression is in operation. In this way spillage or piling up of the coal, if one machine should stop while the operator or attendant is not present, is eliminated. Three-phase, 220-volt, alternating current is used throughout the coal-handling plant, which is equipped with General Electric motors. All control boards for the various motors are housed in the control building, which is located at a sufficient distance from the main plant so that the delicate electrical control instruments may not be injured or incapacitated by coal dust; a push button located near each motor enables the operator to stop and start the machine at will.



This Bridge, Which Connects the By-Product Plant with the Steel Plant Across the River, Is a Cantilever Bridge Erected Without a Traveler and Creeper, a Crane with 110-Ft. Boom Being Used.

The pulverized coal from the storage bin is fed by gravity into one of the two Morgan charging machines. The ovens are of the standard Koppers 30-flue type and the heating system is so arranged that gas is burned in the 15 flues at one end of the furnace and the heated air and products of combustion pass out through the remaining 15 flues to the flue stack giving off heat as they go. This arrangement is reversed every 30 min., insuring a continuous even heat.

Automatic Control of the Heating

This change is made automatically, the gas valves, stack dampers and draft dampers being operated from a central control house, which is situated between the two batteries of ovens. The entire operating mechanism is governed by an electric clock, no attendant being required. The

machines which operate these valves and dampers are electrically driven, but a steam engine is provided for use in emergency. In the central building are also located a Ventura gas meter for recording the gas consumed and other devices for indicating the temperature, gas production, etc.

The discharging, quenching and handling machinery is all standard Kopper equipment. The coke after quenching and cooling is dumped into a wide chute from which it is fed through gates into a conveyor belt on which it is carried to the grader where it is graded into various sizes. Part of it is transported across the river to the furnaces, part is sold for commercial consumption and the breeze is used in the power plant.

The by-product gas, given off at about 1000 deg. C, is collected in a 16-in. main through which it is drawn by two Connersville Stove Blower Co.'s steam-driven gas blowers of 128 cu. ft. displacement, driven by a 250-hp. Harrisburg Foundry & Machine Co. compound engine, and forced through water-tube coolers where it is cooled to about 28 deg. C. The sudden cooling condenses the tar vapors and the tar is run off into a settling reservoir. Here the gas liquors which are contained in the condenser, being lighter than the tar itself, rise to the top and are drained off. The tar in this state is pumped to the nearby plant of the American Tar Product Co.

The gas, relieved of its tar contents passes into the reheater, where it is brought to a temperature of 60 deg. C, at which temperature it is forced into the saturator where the ammonium sulphate is removed in a centrifugal dryer, the ammonia liquor being distilled and the pure ammonia gas used again.

The By-Products Plant

The by-products plant is equipped with four water-tube coolers; a tar extractor; reheater saturator; ammonia still; three benzol scrubbers; two continuous condensing stills for benzol vapor; a condensing still where the light oil is fractioned into crude benzol, crude toluol, crude light solvent naphtha, crude and heavy solvent naphtha; agitators and four 8000-gal. purification stills where the pure products are produced and two final coolers.

Three Gould 20,000-gal. circulating pumps are employed to keep the water in circulation through the water-tube coolers. A tar loading pump of 10,000-gal. capacity and two 6000-gal. hot drawing pumps are provided, together with two 6000-gal. ammonia pumps driven by a 150-hp. Westinghouse motor for circulating the ammonia liquor through the stills.

The power plant, which forms a separate unit, consists of four 400-hp. Sterling water-tube boilers which are fed by two Epping-Carpenter boiler feed pumps. The boilers are equipped to burn either gas or coke breeze, but the coke breeze is generally used, being burned on a Cox chain grate. Forced draft is used.

Electric current is supplied by the West Pennsylvania Power Co., from its Beech Bottom, W. Va., plant, being received at the plant at 22,000 volts, 60-cycle, 3-phase, but is stepped down to 2200 and finally to 220, by a series of Westinghouse transformers. Two G. E. motor generators are used to furnish the direct current required in the plant.

Other features of the plant include a model laboratory and office building, coal test building and service building which is equipped with individual chain hanger for the clothes of the employees, showers, toilet accommodation, etc.

INDUSTRY'S RUIN

Striking Illustrations of Decreased Production of German Plants

WASHINGTON, Sept. 9.—Industrial conditions in the iron and steel industry of the lower Rhine districts are revealed in an interesting light in an "open letter to the public" issued by the Employers' Association of the Düsseldorf district in Germany. A copy of this letter has been made public by the Bureau of Foreign and Domestic Commerce. It follows:

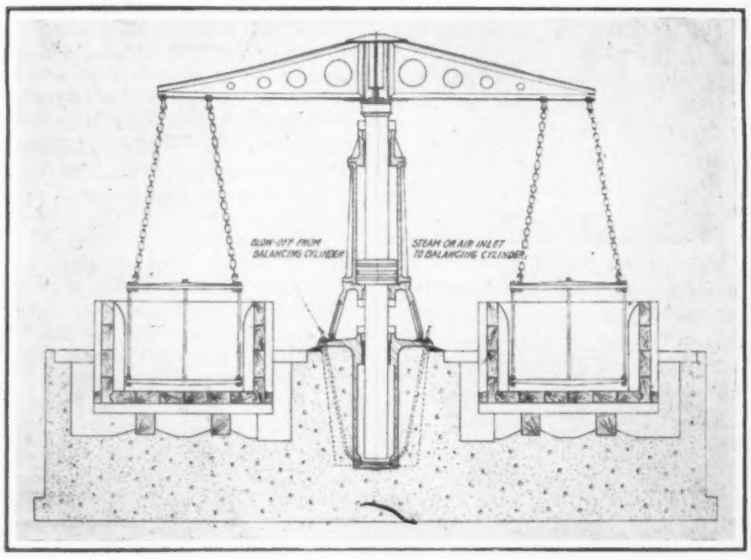
"The strikes which have been increasing in number since November, 1918, and the substantial increases of wages and salaries have almost exhausted the reserves of the industrial establishment, as many customers hesitate to place orders on account of the uncertainties in the political and industrial situation, and the efficiency of the workmen is very low. To quote a few examples: In October, 1918, the production of five blast furnaces in this district amounted to 116,281 metric tons of pig iron; in March, 1919, it sank to 68,000 tons and in April, 1919, it still further declined to 54,635 tons. A number of steel works producing 105,611 metric tons of steel per month in 1918 had an output of only 68,000 tons in March, 1919, and in April, 1919, production decreased to 33,797 tons; that is less than one-third of the output for 1918. In a majority of the works, production has been reduced to less than 50 per cent of the output recorded in the months preceding the revolution.

"How the finances of the works have been affected by the abnormal demands for increased wages may be judged from these examples: In five months after the revolution, one firm paid out in salaries and wages about 1,900,000 marks and sold goods for 1,050,000 marks. Another firm produced goods valued at 4,600,000 marks in 1918, employing 900 workers, of whom about 100 were prisoners of war, 200 to 300 reclaimed soldiers and the remainder women and youths. During the same period in 1919 the same firm employed 1200 able bodied workmen and produced goods of a value of 2,500,000 marks. That is really a pathetic proof of the increasing unwillingness to work. Under such conditions, it is difficult to understand why the workmen are constantly demanding increases in pay and thus driving industry to ruin, for their own existence is involved in the ruin of industry. Under the pressure of steady losses, a number of owners are seriously thinking of closing their factories. That the existence of the worker is threatened in all the districts of the industrial region is evident by the numerous reports of employees and workers being discharged. A sharp light is thrown on this frightful situation by the recent declaration of the board of directors of the Krupp company before the workers of the cast-steel mill at Essen. The mill cannot fully employ its workers in the finishing departments, as there is a shortage of raw materials and semi-manufactured articles due to the reduced production of the furnace and foundries. The firm has informed the workers that it will endeavor to protect them, as far as possible, against the consequences of reduced operation. In case the conditions do not improve within a reasonable time, the company will continue to pay its unemployed workers 70 per cent of their wages for a definite time and later refer them to the unemployed insurance fund of the state, while those doing the work of helpers will, after a like period, receive only helpers' wages."

The Pipe Fittings and Valve Export Association has filed a statement of its incorporation with the Federal Trade Commission, Washington, in compliance with the Webb law. The stockholders of the organization are: Nelson Warner Co., Chestnut Hill, Pa.; Malleable Iron Fittings Co., Branford, Conn.; McNab & Harlin Mfg. Co., New York; Stanley S. Flagg & Co., Philadelphia; Pratt & Cady, Hartford, Conn.; Jarecki Mfg. Co., Erie, Pa., and Walworth Mfg. Co., Boston. The association has no capital. Its officers are: Stanley S. Flagg, Jr., chairman; A. E. Rowe, secretary, and J. S. Mattimore, treasurer.

Air Operated Pickling Machine

The Mesta Machine Co., Pittsburgh, has announced the result of a test of a Mesta pickling machine operated by compressed air. This machine is of steam-driven type and consists of a vertical reciprocating plunger with a spider of three or four arms, carrying crates which move up and down in the pickling and rinsing baths. The Consolidated Expanded Metal Co., Braddock, Pa., recently installed one of these machines, but found it impracticable to use steam as a driving medium, as all power purchased is electric, such steam as is generated being of low pressure for heating purposes only. The installation of high-pressure boilers within the limited space available would have meant considerable trouble in the quick and successful operation of the plant. For these reasons the company, with the co-operation of the Mesta Machine Co., decided to try the use of compressed air. Some apprehension was felt on account of the probable high rate of air consumption in a machine designed to be steam driven; also exhaust steam, originally designed for heating vats, would not be available.



Pickling Machine Designed to Run with Steam, but Successfully Operated with Compressed Air. The vertical plunger with its dead load is balanced on compressed air instead of by the use of counterweights.

In order to produce greater economy, it was decided to use that type of Mesta pickler which balances practically all dead load by compressed air instead of by counterweights. In cases where balancing has been done by counterweights the results were not satisfactory because on the down stroke the unbalanced weight is the only moving force, thus resulting in sluggishness of operation. When using compressed air for balancing purposes the bottom end of the piston rod, with its load, floats on the compressed air; thus the operating piston is relieved of lifting the dead load at every stroke and greater economy of steam and air is obtained. Changes were made in the parts and valves to preserve the speed of piston of operation of the steam-driven machine. The steel casing which surrounds the piston rod is buried in concrete; holding the machine rigid, even if no foundation bolts are used.

When operated with two loaded crates, the machine used 20.7 cu. ft. of compressed air per min. while running at 32 strokes per min. When loaded with one crate, the machine used 19.6 cu. ft. of compressed air per min., while running at 30 strokes per min. In the former case, the air pressure at the machine was 87.1 lb. per sq. in., whereas in the latter case it was 82 lb. per sq. in.

In the test with two loaded crates, the indicated horsepower of the machine was 6.06, while the ideal horsepower, which might have been obtained from the compressed air by expanding it without any loss for the atmosphere, would have been 13.8. The steam-pickling machine uses approximately 35 boiler horsepower. From the comparison it is evident that the introduction of the balancing feature has made the use of compressed air economical.

"Manila and Wire Rope" is the subject of No. 26 of Safe Practices issued by the National Safety Council, 168 North Michigan Avenue, Chicago. Consideration is given to the method of manufacture, application and treatment.

Mineral Production Last Year

WASHINGTON, Sept. 9.—The Department of the Interior has just issued a preliminary report on the mineral production of the United States in 1918 for the purpose of making public as soon as possible the statistics collected by the United States Geological Survey for that year. The statistics given for most commodities are final; those for a few are only estimates based on incomplete returns; but on the whole the report gives a record of the mineral output of the country during the year which will prove fairly complete.

The total value of the minerals produced was about $5,526,000,000, more than half a billion dollars in excess of the value recorded for 1917, but the total quantity produced was less. The output of fuels was greater than in 1917, though somewhat less anthracite was marketed. The increase in the quantity of coal marketed was about 5 per cent, but the increase in value due to higher prices was more than 17 per cent. It is significant that though the increase in the quantity of petroleum marketed was only a little more than 4 per cent, the increase in value was over 32 per cent.

The value of the metals produced was about 3 per cent greater in 1918 than in 1917. The figures show that less iron ore and steel were produced, but here again values were higher. A little more pig iron was made, though the quantity shipped was less. Copper and zinc, not only in themselves but as the components of brass, are perhaps the next in importance to iron in the world's industry to-day, and in 1918 they stood high on the list of war metals. A little more copper but less zinc was produced, and the values of both were lower, that of zinc falling about 25 per cent. The output of the war metals manganese and chromite, used in hardening steel, was greater than in any preceding year. Chromite increased 88 per cent in quantity and 275 per cent in value over 1917, and the increases in manganese ore were 136 and 100 per cent respectively. Less gold and silver were mined than for many years.

The output of building material — clay products, building stone, cement, lime, gypsum—showed a great decline. The domestic production of potash in 1918 was 54,000 tons, an increase of 68 per cent over the output in 1917.

Bust of Jonathan Warner

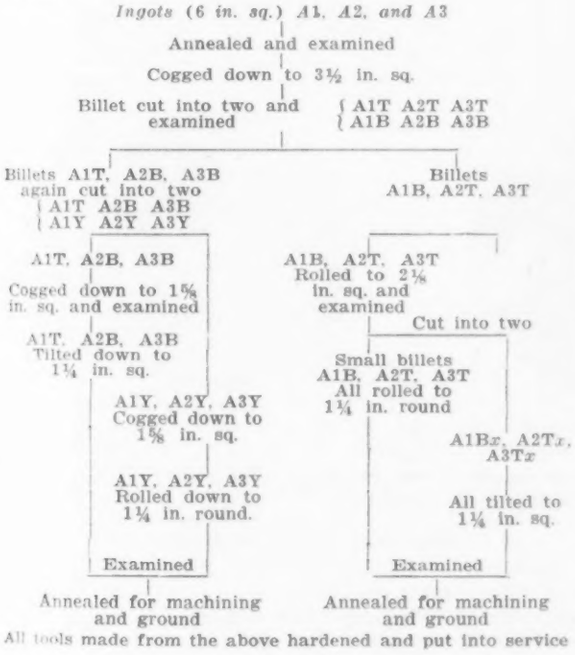
A bronze bust of Jonathan Warner, pioneer in the Lake Superior ore region and the Mahoning Valley in the development of iron ore and the early manufacture of pig iron, has been installed in the McKinley Memorial building at Niles, Ohio. Mr. Warner was grandfather of Jonathan Warner, president of the Trumbull Steel Co., Warren, Ohio. In company with others, Mr. Warner built the first bituminous coal furnace in Brier Hill, now a part of Youngstown, Ohio, using Lake Superior and native kidney ore. This was in the early fifties. In 1858 Mr. Warner, with Captain Wood of Pittsburgh, built the first furnace at Mineral Ridge, Trumbull County, Ohio, using some Lake Superior ore, but chiefly black band ore, from which was made a brand of pig iron called "Warner American Scotch," the first pig iron ever made in the United States that competed with the Scotch pig iron.

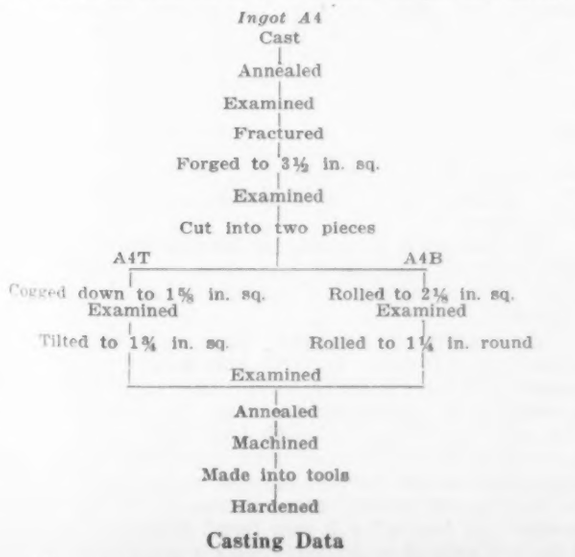
British Practice in High-Speed Steel

Its Manufacture and Subsequent Manipulation—Results of the Practical Application of Scientific Methods—Causes of Tool Failures

AN account of recent practice in the manufacture of high-speed steel, as carried out at the Openshaw works of Armstrong, Whitworth & Co., was presented at the spring meeting in May of the Iron and Steel Institute in London by Dr. J. W. Andrew and G. W. Green, their object being to show the practical applicability of scientific methods. An abstract follows:

Four particular ingots of Armstrong-Whitworth steel were followed through every process, observations being made of times and temperatures of carrying out each particular operation, along with a micro examination of the steel after each successive treatment. The ingots chosen for this purpose were 6-in. square chills about 3 ft. in length. In order to present all the phases occurring in the practical working of the steel it was decided to treat all four ingots in different fashions. Tables representing the operations undergone by the ingots that were followed are as follows:


Ingots (6 in. sq.) A1, A2, and A3
Annealed and examined
Cogged down to 3½ in. sq.
Billet cut into two and examined
A1T A2T A3T
A1B A2B A3B
Billets A1T, A2B, A3B again cut into two
A1T A2B A3B
A1Y A2Y A3Y
Billets A1B, A2T, A3T
A1T, A2B, A3B
Cogged down to 1⅝ in. sq. and examined
A1T, A2B, A3B Tilted down to 1¼ in. sq.
A1Y, A2Y, A3Y Cogged down to 1⅝ in. sq.
A1Y, A2Y, A3Y Rolled down to 1¼ in. round.
Examined
A1B, A2T, A3T Rolled to 2⅛ in. sq. and examined
Cut into two
Small billets A1B, A2T, A3T All rolled to 1¼ in. round
A1Bx, A2Tx, A3Tx
All tilted to 1¼ in. sq.
Examined
Annealed for machining and ground
Annealed for machining and ground
All tools made from the above hardened and put into service



Casting Data

After dead melting the metal from several pots was transferred into a ladle, from which it was teemed directly into the mold (top cast). The temperatures are, however, comparative. The annealing was carried out in a gas-fired furnace. Table 1 gives an average of the casting data.

Table 1—Average of Casting Data

Size of ingot, 6 in. sq. Weight 3½ cwt.
Time of casting, 18 sec. 0.6 ton per min.
Type of ingot, good.

Temperatures		Stripped		Annealed	
In Pots, Deg. C.	Ladle, Deg. C.	Time, Min.	Temp., Deg. C.	Time, Hrs.	Max. Temp., Deg. C.
1420	1330	30	650	48	800

The conclusions to be drawn from photomicrographs taken from the cast ingots after being annealed are as follows: On the extreme edge excessive carbide segregations occur. Nearer in than this, a fine structure persists, while in the center of the ingot the usual coarse-grained structure with the thick walls of carbide is prevalent.

Cogging Down the Ingot to 3½-in. Sq. Billet

The ingot after casting and annealing was cogged down to 3½ in. sq. under a 30-cwt. hammer and about 10 per cent of the head cropped off. Previous to the actual working of the metal the ingots were, before finally heating up for the forging operation, preheated in a gas furnace, being allowed about twenty-four hours to attain a temperature of about 820 deg. C.; they were then immediately transferred, without cooling, to a coal-fired reheating furnace, where, after a period of four to five hours, they attained a temperature of about 1170 deg. C. The time taken in forging varied between very small limits, and on an average was about 4½ min. The final temperature after all work was done was approximately 1000 deg. C. After this, as after every other operation, the billet was examined and any cracks apparent were gouged out by means of steel gouges.

Cogging Down from 3½ In. to 1⅝ In.

After cutting into two the 3½-in. square billets, they were aired under the fire-bars and finally charged into a coal-fired furnace. After forging one end the other end was charged into the furnace, followed, of course, by a similar forging. All the forgings followed through were exceedingly good. Forging was carried out under a 1-ton hammer.

It must be remarked in passing that the term "overheating" is merely used to describe large grain size.

Table 2—Cogging from 3½ In. Sq. to 1⅝ In. Sq.—Average Results

Forging 1st End			Forging 2d End		
Time, Min.	First Temp., Deg. C.	Last Temp., Deg. C.	Time, Min.,	First Temp., Deg. C.	Last Temp., Deg. C.
2	1160	1100	1½	1140	1100

Rolling from 3½ In. to 2⅛ In. Square

In all the rolling operations the bars were heated in a coal-fired furnace, being taken out of the furnace at a temperature of approximately 1100 deg. C. The total time taken for rolling was generally less than a minute, about ten passes being carried through in this time. The final temperature after the last pass was in the vicinity of 1050 deg. C.

Microstructures showed the effect upon the carbide envelopes of this reduction. It was seen that whereas they lack the absolute straightness in direction of the 1⅝-in. and 1¼-in. square and round billets, the extreme curvature existing in the 3½-in. square billets is absent from these, while near to the surface the carbide envelopes are almost entirely broken up.

A reduction from 6 in. square to 2⅛ in. square may

be looked upon as a critical reduction, a reduction less than this being insufficient to entirely elongate and break up the carbide envelopes, while a greater reduction will bring this about.

After the last operation the bars are either rolled or tilted to 1¼ in. round or square. As to whether the work has been carried out through the rolls or upon the hammer appears to make little or no difference to the microstructure. The net effect of any reduction, however performed, being to elongate and eventually break up the carbide envelopes.

After reducing the diameter to 1¼ in. the bars are subjected to an annealing treatment, which consists of simply heating the bars up to a temperature of 900 deg. C., keeping that heat for sufficient time to soak, slowly cooling to 700 deg. C., and then allowing the bars to cool on the floor. After this treatment they are perfectly soft and machinable; they are then cut to length, and either machined or forged according to the type of tool to be made.

The old practice was to heat up to 800 deg. C. in 24 hr., then damp the furnace off from 3 to 6 hr., and finally the bars were allowed to cool down during the next 36 or more hours. It is thus seen that an annealing which required about three whole days to complete has now been replaced by one which requires at the most only 6 to 12 hr. The advantage, moreover, of this process of annealing is that it differs from the old one in so much as it refines the structure of the steel, a temperature of 900 deg. C. being above the critical point on heating; it is not therefore, as in other cases, merely a temper annealing.

Table 3—Rolling from 1⅝-In. Sq. to 1¼-In. Sq.

First end Forging			Time to heat	Second end Forging		
Time Min.	First temp. Deg. C.	Last temp. Deg. C.	from cold Min.	Time Min.	First temp. Deg. C.	Last temp. Deg. C.
1¾	1100	900	11	2	1110	790
2½	1110	790	15½	3½	1140	810
2	1100	870	13	2½	1110	850
1¾	1060	875	15	1½	1050	850

During the annealing of the ingot by the old method the cast structure was in no way refined. All that the annealing does is to bring about decomposition of the individual grains, leaving the high crystalline weakness still present in the ingot, whereas, if the ingot were taken above the critical point, breaking down of this cast structure would result, and apart from the persistence of the carbide envelopes, perfect refinement would be brought about. The forged bars are annealed similarly.

After an annealing of this character the bars are shaped first under the hammer, one heat being employed for the purpose, the bars being heated first slowly on the top of a smith's fire, and afterward put in the hottest part and raised to a temperature of about 1050 or 1100 deg. C. within three minutes. All heavy work is finished when the bar has cooled to 800 deg. C., after which it is inserted in the smith's fire and receives the second and third light shapings on the anvil. This shaping applies only to lathe tools, such tools as milling cutters, twist drills, etc., being machined directly after annealing.

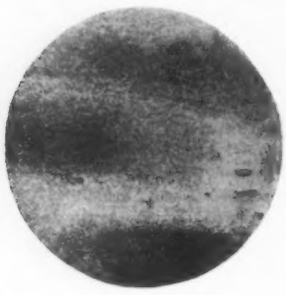


Fig. 1

Fig. 2

Fig. 3

Fig. 1.—Improperly Hardened Steel, Temperature Not High Enough. Fig. 2.—Ideal hardened condition, temperature 1300 deg. C. Fig. 3.—Overheated in hardening, temperature 1305 deg. C. Fig. 4.—Steel hardened at 1310 deg. C. Fig. 5.—Steel hardened at 1340 deg. C. Fig. 6.—Steel hardened at 1350 deg. C. All magnifications 200 diameters reduced by one-third.

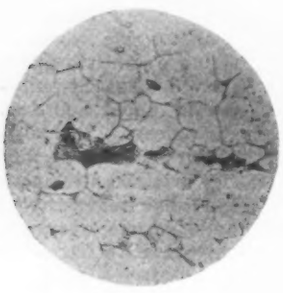


Fig. 4

Fig. 5

Fig. 6

Hardening High-Speed Steel

Lathe tools are hardened by the usual method of gradually bringing the tool up to a medium red heat and then putting it into the hottest part of a muffle furnace and allowing the nose to attain a temperature between 1290 and 1300 deg. C.; after this the tool is quickly withdrawn from the furnace and cooled off in the air-blast or in oil, as the case may be.

In the actual hardening temperatures determined, the variations from the ideal were but slight in the tools followed through; the minimum temperature was 1290 deg. C. and the maximum temperature 1330 deg. C., whereas in the case of hardening large drills a minimum of 1240 deg. C. and a maximum of 1290 deg. C. were observed.

The time taken in heating up for hardening was also found to vary but little in each case, the shortest possible time consistent with adequate soaking being employed.

The factors of time and temperature both work in the same direction. High temperature, by promoting greater molecular mobility, will promote excessive grain growth, while prolonging the time of heating acts in the same direction. Although high temperature may promote greater solution of the free carbide this means should not be used for that purpose, as the result would be large grain growth, whereas even at the high temperature of hardening it was found that massive carbide, if it existed in the tool previous to this operation, was only with difficulty even partially got into solution.

As an illustration of the enormous effect of slight

Table 4—Rolling from 2⅛-In. Sq. down to 1¼-In. Round

Temp. Coming Out of Furnace Deg. C.	Rolling: Total Time Secs.	No. of Passes	Average Time Per Pass Secs.	First Pass Temp. Deg. C.	Last Pass Temp. Deg. C.	Average Temp. Drop per Pass Deg. C.
1050	136	18	7.5	Missed 5th pass 1015	830	13
1030	79	18	4.5	Missed 2d pass 1040	Missed 16th pass 945	6.6
990 scale chilled	110	18	6	Missed 2d pass 1090	Missed 17th pass 880	13
990 scale chilled	10.	18	5.5	Missed 2d pass 1100	895	12

differences in hardening high-speed steels Figs. 1 to 6 are reproduced, showing various structures. Fig. 1 shows an improperly hardened steel, the temperature not having been high enough. Fig. 2 is a steel in the ideal hardened condition; this was hardened at 1300 deg. C. Fig. 3 is a steel overheated in hardening. Note the increase in the size of grain. This was hardened at 1305 deg. C. Fig. 4 is of a steel hardened at 1310 deg. C., and shows the almost complete absence of free carbide, and how its liquefaction has caused it to re-solidify at the grain boundaries with a characteristic eutectic structure. Fig. 5 shows a steel hardened at about 1340 deg. C. which has become slightly "crozzled." Fig. 6 shows a specimen completely "crozzled" at 1350 deg. C.

Table 5—Tilting from 2⅛-In. Square to 1¼-In. Square—Average Results

Forging First End: Time to Heat Min.	Forging Time Min.	First Temp. Deg.C.	Last Temp. Deg.C.	Forging Second End: Time to Heat Min.	Forging Time Min.	First Temp. Deg.C.	Last Temp. Deg.C.
20	3½	1080	750	22	2¾	1080	830

All temperatures are actual observations without corrections. It is seen from this that at observed temperatures above 1305 deg. C. liquefaction of the carbide begins.

Yatsevitch, in *Revue de Métallurgie*, 1918, shows from a heating curve that the solidus of a steel of similar composition occurs between 1300 deg. C. and 1330 deg. C., the melting point in heating being 1450 deg. C. Upon cooling from the melt, the same author shows that whereas freezing commences at 1450 deg. C., the metal is not completely solidified until a temperature of 1280 deg. to 1285 deg. C. is obtained.

The effect of this is that this liquid solidifies on cooling again around the boundaries of the crystals as a eutectic. These differences, occurring as they do with slight variation in temperature, are very striking.

Cutting Tests

A few cutting tests of the steels after being properly hardened were taken. The results of these are given below:

Tool No.	Horsepower: Light	Horsepower: Full Load	Feed In.	Depth of Cut In.	Speed per Minute Ft.	Time to Break Down Min.
1	15	40	1/32	1/32	80	22
2	15	40	1/32	1/32	80	21½
3	15	40	1/32	1/32	82	15

The billet used for the cutting tests was not annealed; it was of the following composition: Carbon, 0.32; manganese, 0.50; silicon, 0.114; sulphur, 0.028; phosphorus, 0.041; nickel, 0.22 per cent. The test from this material broke at 33.8 tons per sq. in.

Segregation of Tool Steel Ingots

Series of analyses were taken from the top third of one ingot and from the top and bottom crop ends of two others of those whose manufacture and further treatment had been followed through. No segregation—even of carbon, sulphur, or phosphorus—occurred, and the tiny carbide segregations which were frequently observed in the micro examinations are not units of large ingot segregations.

The absence of segregation is probably due to two causes: Small size of ingot and very quick solidification due to the chilling effect of the molds and to the presence of large quantities of special elements in the steel. The above-mentioned two causes are in the main the reasons for the almost entire absence of blowholes in these ingots.

Elimination of Carbide Lines

The chief sources of trouble in certain classes of tools, especially large milling cutters, hobs, etc., which cannot receive as much work as, say, a lathe tool or twist drill, is invariably found to be due to the presence of laminated carbide lines. These carbide lines, which are forged out and elongated segregates formed from the melt, are most difficult to eliminate when once formed. The carbide in question is the massive carbide at the boundaries.

If once the carbide be taken into solution and afterward deposited from the same, it comes out of solution

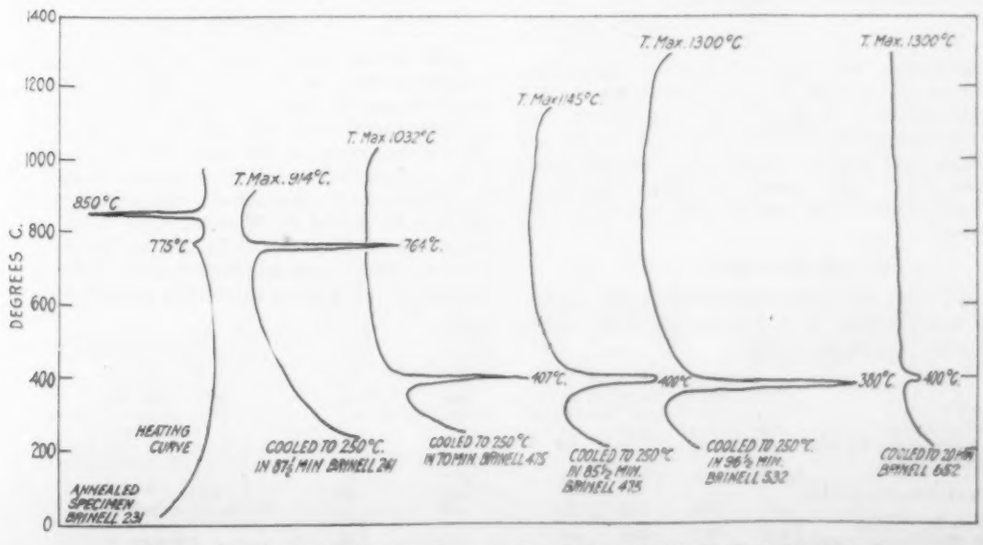


Fig. 7.—Heating and Cooling Curves of a Leading British High Speed Steel

in the form of small dots or nodules, and in this finely divided state is readily taken into solution during the hardening process. Such carbide therefore that comes out upon annealings is in no way detrimental. An ordinary hardening treatment, owing to the necessity of its being carried out as quickly as possible, is totally insufficient to enable the massive carbide segregates to be disposed of.

A number of experiments were therefore tried in order to determine the effect of a prolonged soaking of a segregated piece of metal at a temperature between 1150 deg. C. and 1200 deg. C. A piece of tool steel was packed in a non-oxidizing material in a crucible and heated between these temperatures for a period of six hours; it was then slowly cooled in the furnace, taken out, broken, and half of the piece again put back for another six hours, the same process being gone through

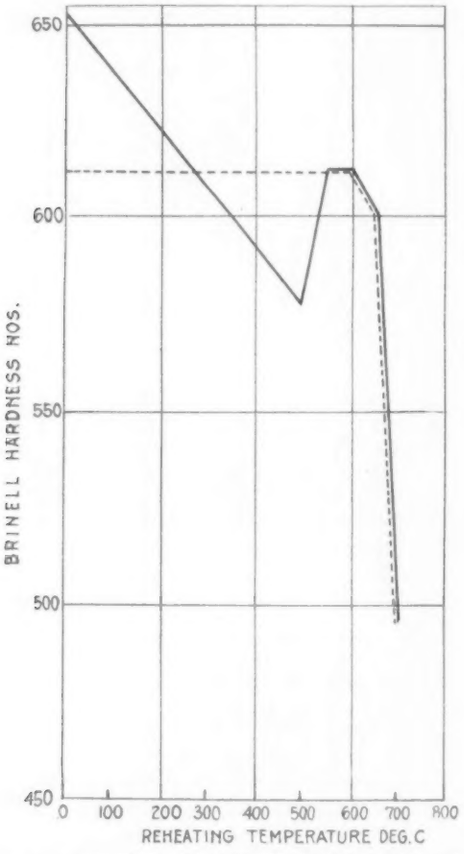


Fig. 2.—Secondary Hardness of A. W. Steel. Full line: Steel hardened before secondary treatment experiments. Dotted line: Steel hardened and heated to 600 deg. C. for 10 minutes before secondary treatment experiments.

while another piece was given a further six hours. Thus the effects of high temperature annealings carried out for 6, 12 and 18 hr. respectively were determined.

The microstructure after these successive treatments presented each time similar carbide boundaries which existed in the original cast structure. After this treatment they were thinner and less massive, but were very sharply defined.

Brinell Hardness

The Brinell hardness was measured after each operation in the manufacture of the tools, and the results condensed in the following table:

Operation.	Brinell. Average.	Brinell. Highest.	Brinell. Lowest.	Number of Determinations.
After annealing ingot	259	262	255	16
After cogging from 3½ in. sq.	540	600	505	19
After rolling from 3½ in. to 2¼ in.	604	652	555	9
After cogging from 3½ in. to 1⅝ in.	610	562	600	15
After tilting to 1¼ in. sq.....	616	652	600	18
After rolling to 1¼ in. round				
After annealing	249	269	231	12
After hardening	652	...	...	...

With a decrease in cross-section there is a corresponding increase in the Brinell hardness number.

Heating and Cooling Curves

In Fig. 7 will be found a heating curve followed by a series of cooling curves of A. W. steel taken from different temperatures and with varying rates of cooling. In the heating curves two points are shown, a small one with a maximum at 775 deg. C. and a larger one (maximum 850 deg. C.). The exact significance of the lower point has not yet been determined.

A steel when heated and quenched above the lower point reveals no alteration in hardness, the value obtained being 231, which is that of the annealed steel. The upper point, maximum 850 deg. C., appears to be similar to the ordinary Ac3,2,1 change, the temperature of this change being raised very considerably by the combined presence of tungsten and chromium.

A steel quenched above the upper point on heating, namely, 880 deg. C., has a hardness of 532.

Cooling from an initial temperature of 914 deg. C. one large evolution of heat is shown at 764 deg. C. The change from the hard to the soft state is so complete in cooling from this temperature even at a moderately rapid rate that the hardness has been reduced to 241.

Cooling from an initial temperature of 1030 deg. C. the critical point is depressed to 407 deg. C.; this depression progresses slightly with the maximum initial temperature until at a temperature of 1300 deg. C., with very slow cooling, a very large evolution of heat is obtained at 380 deg. C. The variation in hardness with increasing temperature is rather remarkable. With an initial temperature of 1032 deg. C. and also of 1145 deg. C. with furnace-cooled specimens the Brinell figure was 475. With an initial temperature of 1300 deg. C. slowly cooled (ninety-six minutes) the hardness figure jumped to 532.

If we compare the steels cooled from 1145 deg. C. and 1300 deg. C. respectively, we note that although the latter presents a larger evolution of heat at the critical point, the resulting product is harder. This can only be accounted for by assuming that a definite chemical or physical change takes place in the metal at the high temperature, with the result that the product deposited as the steel passes through the recalescence point, or the remaining solution, is harder than in the case of the steel cooled from 1300 deg. C.; that is to say, there must be some radical change in constitution between the temperature of 1145 deg. C. and 1300 deg. C. This agrees with Yatsevitch, who found that the higher the initial temperature, the larger the evolution at the critical point and the greater the hardness.

With a moderately rapid cooling from 1300 deg. C. a small point is observed at 400 deg. C., whereas if air-blast is employed a curve free from all critical points is obtained. This represents the rate of cooling that should be attempted in practice. A steel quenched from 1300 deg. C. has a structure shown in Micro 29, which is similar to that of a steel quenched in the air-blast.

Annealing Treatment

As before mentioned, the system adopted in the works for the annealing of tools occupied about three days' time. It was obvious, however, after taking a cooling curve from 914 deg. C. and measuring the resulting hardness of the specimen, which was 241, that a far quicker and simpler treatment might be employed to produce the same effect. Accordingly specimens of about 1 in. sq. of A. W. steel were taken, and in order to get them in a state similar to that of the ingot or forging, they were air-hardened to 1300 deg. C. The following table summarizes the experiments:

Max. Temp. Deg. C.	Time at Heat. Hr.	Time Cooling to 740 deg. C.	Brinell No.
945	½	1½ hr.	302
940	nil	½ hr.	475
935	½	1½ hr.	269
900	½	1½ hr. Water quenched.	255
		1½ hr. Air cooled.	253
		1½ hr. Furnace cooled.	243
		1½ hr. Very slowly cooled.	248
870	½	1 hr.	269
860	nil	20 min.	302
800	½	Water quenched from 800 deg. C.	340
	1	Furnace cooled.	321
	1½	Furnace cooled.	302
	2	Furnace cooled.	293
	3	Furnace cooled.	287

The aim of these experiments was to take the steel to a temperature slightly above the critical point on heating, and to avoid taking it to a temperature which would produce any self-hardening, which occurs when the maximum temperature is such that a recalescence at about 400 deg. C. begins to show.

It is seen from the table that a temperature of 950 deg. C. is the maximum limit to which the steel can be heated in order to bring about complete softening. The maximum that should be employed in practice to give the best results is 935 deg. C., while the minimum to effect the same is 870 deg. C.

All that is necessary, therefore, is to heat the bars up to between 870 deg. C. and 935 deg. C., thoroughly soak at this temperature, and cool off within about one hour to 740 deg. C., when complete softening will have been brought about. After this the bars may be pulled out and cooled quickly in air.

Secondary Hardening

Some experiments of the type carried out by Professor Edwards upon secondary hardening treatment gave the results shown in Fig. 8. The full line indicates hardness after various tempering temperatures, the initial hardening being carried out at 1300 deg. C. The usual minimum is seen at a temperature of about 500 deg. C., rising to a maximum between 550 deg. C. and 600 deg. C. The dotted line shows the effect of tempering at various temperatures after hardening and a preliminary secondary hardening carried out at 600 deg. C.

The effect of secondary hardening, although it lowers the initial hardness of the specimen, does increase the stability of the steel. After this treatment the hardness remains constant throughout up to a temperature just above 600 deg. C.

Causes of Failures in Tools

Failures arise in tool steel due to various causes. Some may be traced back to faulty casting, others to faulty rolling, and also to faulty hardening. If too high a casting temperature is employed a highly dendritic structure will result. This structure, which is naturally weak, cannot be afterward obliterated either by heat treatment or even mechanical work.

Although the analyses previously given from all parts of an ingot show that practically no segregation occurs in tool steel, the authors have come across one case where this did occur. This segregation, which was harder and more brittle than the surrounding metal, naturally was the cause of failure of the tool. The occurrence of slag and manganese sulphide is very rare in tool steel; occasionally, however, they are met with. Small roaks are sometimes developed by forging.

Carbide segregations are undoubtedly the most troublesome features that arise in tool steel. They usually only occur in the case of tools of such large size as to permit little forging to be put into them. They are of the noted hook or crook shape so detrimental to tool steel. Sometimes these carbide segregations exist as envelopes around the grains. This indicates even less drastic forging than the former case. Carbide out of solution in steel in any form other than small specks is invariably found to be detrimental.

Cracks running through the steel in no particular direction—that is to say, their course not determined by the grain boundaries or carbide envelopes—are occasionally found in a steel which has not been hardened at a sufficiently high temperature, the metastability of a semi-hardened structure being far greater than that of a properly hardened structure, the nuclei of the stable phase creating a tendency for a volume change to take place in the metal which will cause a crack.

Summary and Conclusions

As far as casting is concerned some slight improvement might be made by increasing the thickness of the mold walls and lowering the pouring temperature of the metal.

An investigation of the various forging operations of cogging, rolling, etc., has been made, and it has been found that, for efficient forging, temperatures must be used which are appreciably higher than those generally accepted as correct.

It is also shown that whether reduction is effected by rolling or hammering, or a combination of both, there appears to be little or no difference in the microstructures.

What is, however, of the utmost importance is the amount of reduction in forging which the metal undergoes between the cast state and the finished bar.

Micros taken after various processes of forging and rolling indicate that below a reduction of 88 per cent for a 6-in. ingot, the distorted carbide envelopes occur in the form of loops and hooks of various configurations, and it is in this form that they are most dangerous. This is a point emphasized by Brearley in his book on tool steel.

Finished milling cutters which have broken in use owing to carbide laminations invariably show the laminations to be in this form. If the laminations are discontinuous and broken up they seldom give rise to trouble. From this we must conclude that the reduction should even go beyond this figure. For large tools, therefore, it is desirable to cast a larger ingot and to put more work into the steel.

Experiments have shown that carbide in the finely separated state can be readily made to go into solution at a sufficiently high temperature. If, however, it occurs in the massive form as in the carbide envelopes or laminations, it is almost impossible to bring this about, as has been shown by the experiments mentioned, namely, by high temperature soaking.

With regard to annealing treatment, all that is necessary to bring about complete softening of the steel is to heat the steel just above its higher critical point on heating, and slowly cool down through the point on cooling.

Hardening times and temperatures are of the utmost importance. Grain growth in high-speed tool steel is certainly slow when compared with carbon steel at low temperatures, but at the high hardening temperatures it is rapid enough to give rise to a very coarse structure even with an increase of 20 per cent in a hardening time of 2½ min.

The temperature limits for really efficient hardening are as narrow as 10 deg. C. Hardening should be carried out between the temperatures of 1310 deg. C. and 1320 deg. C. (corrected temperatures). If the temperature is above 1300 deg. C., overheating and finally burning will occur, whereas, if below 1320 deg. C., an insufficiently hardened steel will result. In either case defective tools will result.

International Trade Conference

Many business men have been invited by the executive committee of the International Trade Conference to attend the meeting called by the Chamber of Commerce of the United States at Atlantic City Sept. 31 to Oct. 3 to confer with delegates from England, France, Italy and Belgium about plans for the restoration of commerce.

There will be from five to seven delegates from England, France, Italy and Belgium, and in addition a force of secretaries, making a party of 50. It is expected that 3000 American business men will meet them at Atlantic City. After the conference the foreign delegates will make a short tour, visiting leading industrial centers, as guests of the Chamber of Commerce of the United States.

The Chesapeake Iron Works, Baltimore, gave an outing for its employees and their families on Sept. 6 in honor of the employees who served during the war. The affair also was given in celebration of the company's building, shipping and erecting in less than one-and-a-half years of the war more than 140 Chesapeake electric traveling cranes, all of which were put into war service. This company built the entire crane equipment in the United States Base Ordnance plant throughout France. F. S. Chavannes is president of the works.

WIRE COMPANIES MERGED

Consolidation Will Be Known as the General Wire Co.—Will Have Large Capital

The Spencer Wire Co., Worcester, Mass., with large plants in that city and in Spencer, Mass., has been merged with the Clinton-Wright Co. of Worcester, and the directors of the latter corporation have recommended to the stockholders that the name be changed to the General Wire Co., and that the capital stock be increased from $12,500,000 to $16,000,000. A stockholders' meeting to act on questions affecting the merger has been called for Sept. 17, at Worcester.

Harry W. Goddard, president and treasurer of the Spencer Wire Co., enters into the conduct of the corporation as chairman of the board of directors, succeeding George M. Wright, former head of the Wright Wire Co., who retires from the management but remains a member of the board. Frank Kilmer, secretary and assistant treasurer of the Spencer company, will be the treasurer, and George M. Thompson, manager of the Spencer company, has been elected the third vice-president, and will have charge of operations of all the plants of the company.

Evan F. Jones remains as president and general manager, John A. Denholm as vice-president in charge of sales, George F. Wright vice-president and assistant general manager, and there will remain as directors these officers and George M. Wright, Charles F. Fairbanks, formerly head of the Clinton Wire Cloth Co.; Paul B. Morgan, president and treasurer of the Morgan Construction Co.; Frank A. Drury, president Merchants' National Bank, Worcester; Harry Bronner, president Missouri Pacific Railroad, George F. Naphen of Liggett & Drexel, bankers, New York, and Richard B. Young, vice-president of E. H. Rollins & Sons, bankers, Boston. The executive committee as named will consist of Chairman Goddard, President Jones, Vice-President Thompson, and Mr. Naphen, through whose efforts the consolidation of these several companies was effected.

The absorption of the Spencer Wire Co. by the General Wire Co. centralizes in two companies the wire business of central Massachusetts; in fact, the new corporation owns practically everything outside of the great plants of the American Steel & Wire Co. at Worcester and New Haven, Conn. It is the merger of all the independent companies, save only a few whose business is on a relatively small scale. It owns the two plants of the Spencer Wire Co., the plants of the Wright Wire Co. at Worcester and Palmer, Mass., the plant of the Morgan Spring Co. at Worcester and that of the Clinton Wire Cloth Co. at Clinton. Based on current business, the combined works will have an estimated output of $20,000,000 of wire products annually. These products include virtually everything in the way of wire, and a multitude of wire products. The Spencer Wire Co. brings to the business a wide variety of standard goods as well as many highly developed specialties. The business of this newly acquired company is a large one, rivaling that formerly conducted as the Wright Wire Co., employing more than 1000 hands.

In increasing the capital stock from $12,500,000 to $16,000,000, it is proposed to issue $5,000,000 of non-voting 8 per cent convertible preferred stock, $1,500,000 of which will be given in exchange for that amount of voting 7 per cent preferred stock now outstanding, the holders of which have agreed to the action. This will divide the company's securities into $7,500,000 common stock, $3,500,000 first preferred stock, and $5,000,000 convertible preferred stock.

Other announcements as to the personnel of the management include Clarence D. Mixter, for many years credit manager of the Wright Wire Co., as assistant treasurer; Winthrop G. Hall, superintendent of the Spencer Wire Co., and John Wheeldon, works manager, as continuing in the same capacities in the plant which will hereafter be known as the Spencer Wire Division; Charles H. Keenan, formerly chief clerk of the Morgan Spring Co., as auditor, and Harry F. Hildreth as chief accountant. Albert C. Lorion, for many years purchasing agent for the Wright company, will be purchasing agent for the entire company.

Officials of the company state that additions will be made at the Palmer plant, to largely increase the capacity of the wire mills, that the needs of the Clinton works may be met by the company, instead of being filled from the general market, as was formerly the case. It is also stated that the company plans to build eventually blast furnaces and steel mills, probably in the Buffalo district.

The Lake Superior Corporation's Year

Lower net earnings, but in several respects an improved general position, are shown in the annual report of the Lake Superior Corporation. Net earnings for the year ended June 30, 1919, from operations of subsidiary companies, excluding the Algoma Central & Hudson Railway, were $5,441,574, against $6,551,495 the previous year. The balance brought forward from 1918 was $668,292, but this year it increased to $1,589,388.

The Algoma Steel Corporation, chief of the subsidiaries, with works at Sault Ste. Marie, had net earnings of $5,035,032, compared with $6,001,891 the previous year. This company, however, in addition to paying a back dividend of 7 per cent on the cumulative preferred stock for the year ended June 30, 1915, amounting to $700,000, paid $350,000 on account of the preferred dividend for 1916, carrying forward a balance of $1,433,875, against $764,038 the previous year. Its current assets stand at $13,834,842, compared with $11,147,259 the previous year, while current liabilities are but $2,449,790, against $3,059,826 in 1918. Production, as compared with the preceding year, was as follows:

	1917-18 Tons	1918-19 Tons
Coke	379,040	406,398
Pig iron	314,188	336,657
Steel ingots	499,712	414,932
Steel products	329,438	322,011

President Wilfred H. Cunningham, in reviewing conditions, says that the change from war to peace naturally resulted in a stoppage of the manufacture of shell steel and steel for munitions purposes generally. "Toward the end of the year the mills resumed the rolling of normal products in the shape of steel rails, rail fastenings, merchant bars, shapes, etc. Up to the time of making this report business has not been plentiful, and for the last few months the mills have been operating at about half capacity." He believes that repairs and replacement orders for steel must soon absorb considerable quantities of steel products. The long-cherished idea of a plant for rolling structural shapes, he says, should now be dealt with, and plans are in preparation for a 40-in. blooming mill, 36-in. roughing mill, and three-stand 28-in. combination structural and rail-finishing mills. This plant, the directors believe, would have sufficient business, and it is vital to the continued success of the steel company. A scheme for financing the undertaking will be submitted to stockholders at an early day. Meanwhile, the rail mill is being arranged to care for such structural shapes up to 15 in. as may be required by the market.

The Algoma Central & Hudson Bay Railway's net earnings after depreciation were $263,293, against $439,219 the previous year. Its freight traffic, prior to the armistice, had consisted largely of munitions and materials for war supplies. The Algoma Eastern Railway's deficiency for the year was $31,076, as compared with a deficiency for the previous year of $130,615.

President Cunningham states that a committee of directors visited London in July and reached a tentative agreement with the bondholders' committee of the Algoma Central Railway and Algoma Central terminals with a view to settling the obligations of the Lake Superior Corporation under its guarantee of principal and interest. Full interest is being paid on the corporation's income bonds.

Pulverized Coal in Boiler and Furnace

A Comparison with Producer Gas as Fuel for Open-Hearth Furnaces—Advantages and Disadvantages Discussed

TWO papers on pulverized coal were presented at the spring meeting of the American Society of Mechanical Engineers, Detroit, the one "Pulverized Coal as a Fuel" by N. C. Harrison, general superintendent Atlantic Steel Co., Atlanta, Ga., and the other "Pulverized Coal for Stationary Boilers" by Frederick A. Scheffler, manager pulverized fuel department, Fuller Engineering Co., New York, and H. G. Barnhurst, chief engineer Fuller Engineering Co., Allentown, Pa. Mr. Harrison stated that practically any coal can be burned in pulverized form with a proper furnace and burning equipment, but that, generally speaking, the most satisfactory results are obtained when the ash content is less than 10 per cent, the volatile averaging between 30 and 40 per cent and the fixed carbon between 40 and 50 per cent. The sulphur content, he said, should be low, although coal with a sulphur content running as high as 4½ to 5 per cent is being burned in pulverized form under boilers and without any detrimental results; also the ash should have a high melting point. A coal pulverizing plant was described and plant pulverizing costs issued by a pulverized coal engineering company were presented. The essentials of design of metallurgical furnaces for the combustion of pulverized coal were discussed. Mr. Harrison stated that very fine pulverization was necessary for quick combustion and for the removal of the sulphur in the coal; and in order to obtain this complete combustion before the flame strikes the bath, some 6 or 8 ft. are necessary from the end of the burners to the bath.

Pulverized Coal versus Producer Gas

The advantages and disadvantages from the use of pulverized coal, as compared with gas producers, as a fuel for open-hearth furnaces were summarized by Mr. Harrison as follows:

(*a*) Since the coal is of a more even chemical composition all the heat units are consumed in the furnace, while in the case of the gas producer from 18 to 25 per cent of the heat units are lost in the producer itself when converting the coal into gas. This will result in a greater number of heats per week.

(*b*) Open-hearth furnaces using powdered fuel operate on a very low fuel consumption equal to the best producer-gas practice, and much better than the average of the older plants in this country; at our plant (the Atlantic Steel Co., Atlanta, Ga.) about 50 per cent less.

(*c*) Coal can be pulverized in plants of about 100 tons daily capacity and delivered to the furnace for approximately 50 cents per ton, which is about the same as the costs for gasifying coal in gas producers.

(*d*) Although the use of this fuel in metallurgical furnaces has been developed only about 75 per cent, we believe that this development is steadily increasing. In our plant the pulverized-coal open-hearth furnace has been shut down oftener than our producer-gas furnace of the same size, due to checkers and slag pockets filling up with cinders and slag, after about 80 heats; we are gradually overcoming these troubles by decreasing the size of our uptakes and enlarging the slag pockets, thereby holding the gases in the furnace longer and passing them slowly through the large slag pockets, so that the heavy particles can settle, and now only the fine particles are going to our checkers, which particles are being blown off daily by compressed air. By these means, we expect to get much longer life out of our checkers, and consequently longer runs out of the furnace, since the filling up of the checkers has always been the deciding factor in the length of run of the furnace. On account of this continued development, we believe that inside of six months we will show a 25 per cent increase in production over our gas-producer furnaces of the same size.

(*e*) Sulphur does not give us any trouble as long as we have good draft and the furnace is working hot, as we are now using over 1 per cent sulphur in our coal and getting good results, although when checkers get clogged up and the furnace begins to blow, due to lack of draft, we have trouble with the bath taking up sulphur. This takes place during the last week's run of the furnace, just before it goes down for repairs.

(*f*) The pulverized-coal open-hearth furnace is under complete control of the first helper as to the amount of coal being used at all times, air blast and temperature.

(*g*) The flame, using the same coal as on gas producers, is hotter, which allows us to use a greater percentage of scrap per ton of steel, thus reducing the consumption of high-priced pig iron.

(*h*) The finished steel is quieter in the molds, due to not being overly oxidized, as the coal coming directly in contact with the bath has a greater reducing action. We feel reasonably certain that the oxidation losses are less with pulverized coal than with producer gas, consequently the per cent of product is greater. All gas-house troubles are eliminated (cleaning fires, burning out flues, etc.) although the pulverizing plant must be given attention as to dryness and fineness of coal.

(*i*) Up to date, our refractory costs have been very much greater on our furnace using pulverized coal than on our gas-producer furnaces and was almost twice as great a year or so ago, although I believe on account of the steadily increasing development of the use of this fuel, these refractory costs will be steadily decreased.

Pulverized Coal versus Stokers

For the proper combustion of pulverized coal under boilers Mr. Harrison gave five main points which must be given consideration. These included coal fineness, size of combustion chamber, necessary air opening, proper damper regulation and clean tubes. After discussing these points in detail, the advantages of pulverized coal as a fuel for boilers over stokers were pointed out as follows:

(*a*) Much wider variation in the quality of the coal usable is obtained when burning coal in pulverized form.

(*b*) Ability to take care of peak loads almost instantaneously, the flexibility approaching that of oil or natural gas.

(*c*) The amount of coal that can be burned per sq. ft. of grate surface on stokers is limited so that for increased capacity the boiler setting must be spread out to cover more area. When using pulverized coal proper furnace conditions can be obtained by increasing the height of the boiler setting or the depth of the combustion chamber.

(*d*) By throwing a switch the entire firing operation ceases, an advantage in case of accident or emergency.

(*e*) Ash is in much better condition to handle, being in the form of a dust or slag depending upon its melting point. This helps to maintain constant furnace temperature as there are no interruptions to firing conditions on account of cleaning fires.

(*f*) Since there are no grates used when the fuel is burned in pulverized form, clinkering of grates is avoided.

(*g*) Pulverized coal is fired dry, containing less than 1 per cent of free moisture, whereas coal burned on stokers may vary anywhere from 1 to 10 per cent of free moisture as fired.

(*h*) Considerably less excess air is necessary for complete combustion. This means less power for the air supply, particularly where forced draft is used, and less stack losses. Lower grades of coal fired on stokers require more excess air, as it is quite difficult for the oxygen to get in close contact with the combustible.

(*i*) All the combustible in the coal is consumed when it is burned in pulverized form, providing the furnace capacity is not exceeded.

(*j*) There is less erosion from sulphur on the boilers due to less moisture in the coal as fired, therefore high-sulphur coals can be burned more readily and without serious results.

(*k*) With furnace properly proportioned and with properly designed burning equipment smokeless operation may be maintained indefinitely. This is due to complete combustion of all the particles of coal before coming in contact with the cold surface of the tubes of the boiler.

The report of a test made on a 468-hp. Edge Moor boiler operating under the Lopulco system was pre-

sented in detail, with figures giving a resulting net efficiency of 81.1 per cent, which was a higher figure than that obtained in the same plant on other boilers fired by the underfeed stokers.

Other advantages resulting from the use of pulverized fuel under boilers were summarized by Mr. Harrison as follows:

(*a*) Continuous boiler operation at a uniform rating as well as a constant efficiency is made possible. At no time is there a loss in capacity due to the clinkering of coal on the grates or the cleaning of fires, as is the case in stoker practice.

(*b*) Heavy overloads can be taken on or dropped off in a very brief time through adjustment of the coal feeders and the furnace drafts.

(*c*) From 97 to 98 per cent of the combustible in the coal is utilized, regardless of the quality of the fuel.

(*d*) The ash-handling costs are reduced to a minimum due to the reduced volume.

(*e*) The banking conditions when operating with pulverized coal are somewhat different from those obtained in stoker practice. By stopping the fuel supply and closing up all dampers and auxiliary air inlets a boiler can be held up to pressure for about 10 hr. The furnace brick work having been heated to incandescence during operation gives off a radiant heat which is absorbed by the boiler rather than being sent out through the stack.

Pulverized Coal for Stationary Boilers

In discussing reliability of pulverized coal apparatus for stationary boilers the paper presented by Fred A. Scheffler and H. G. Barnhurst states that the mechanisms for pulverized fuel are equally reliable as mechanical stokers, but that in the continuity of operation of the furnace the advantage lies with pulverized fuel for several reasons. The mechanism is altogether outside the furnace, hence cleaning and adjustment and the making of the few repairs required need not interrupt the operation of the boiler. In case of sudden necessity the fire may be ignited and quickly brought to full intensity, or it may be extinguished almost instantly. The greater uniformity of flame and temperature is also conducive to longer life of the furnace lining in a properly designed furnace and to a minimum variation in furnace efficiency. Finally, the pulverized-fuel installation relieves the power plant from dependence upon the availability of a certain grade of coal. Adaptability of pulverized fuel was discussed in detail and the primary requisites of furnace design were pointed out.

Cost figures for delivering pulverized fuel to boilers were presented, the total cost for a 1000-ton plant being given as $0.3895 per net ton. This was compared with the cost of stoker operation, which was figured from data given to be $0.425 per net ton.

Discussion

In the discussion of the Scheffler and Barnhurst paper Thomas A. Marsh, chief engineer Green Engineering Co., Chicago, took exception to the test figures in that the tests submitted were of 4 or 5 hr. duration and evidently not made under the A. S. M. E. code, and contrasts stokers of the most expensive type to operate as to power to drive and as to power for fans. Exceptions were taken by Mr. Marsh to some of the statements as to reliability, adaptability and furnace design, also the cost of pulverizing coal. In discussing Mr. Harrison's paper Mr. Morris said that from the figures presented some good efficiencies were indicated when high-grade coals were burned, but that no tests were presented on low-grade coals. The advantage in efficiency, however, in his opinion, was insufficient to offset the increased cost of preparing the fuel, thus causing the pulverized fuel burner to operate at a loss, regardless of the efficiency obtained. Fuel costs will have to be from 50 to 100 per cent higher, he said, before the increased cost of pulverizing will be justified, unless pulverizing and drying costs decrease materially. The author pointed out that ash from chimneys is at present a prohibitive feature in cities.

So far as the better grades of bituminous coals are concerned, it was the opinion of W. G. Diman, superintendent of power Amoskeag Mfg. Co., Manchester, N. H., that the cost of drying, pulverizing, conveying, feeding and the first cost of the apparatus, together with the fact that all grades of fuel can be burned with a tolerable degree of smokelessness and efficiency in the regular stoker apparatus, would restrict the use of pulverized coal for boiler purposes to special cases. "If low-grade waste coal can be utilized for pulverized fuel," he said, "there is a great field for its use. There must be some limit, however, in the use of low-grade fuel, for the cost of grinding would eat up any advantage in the economy. Where low-grade fuels are high in ash and slate there should be a limit to the proportion that one can afford to grind."

Process of Combustion of Pulverized Coal

An explanation of the process of combustion of pulverized coal was given by Albert A. Cary, consulting mechanical engineer, New York City. "Pulverized coal," Mr. Cary said, "must be burned while suspended in the current of air which accompanies it into the furnace. As the finely divided coal enters the highly heated furnace any moisture contained by each minute particle is first driven out, and if this is excessive, it will form a steam cloud around the particle and suppress its further rapid combustion, thus defeating to a greater or less extent the purpose for which the coal was prepared. One of the necessities for supplying the furnace with very dry pulverized coal is thus appreciated. With little or no moisture present, the next effect of the very high surrounding temperature in the furnace is to almost instantly distill off the volatile matter occluded in the coal, as this gas is liberated at a comparatively low temperature, and thus, with properly designed furnace and burner, the dust cloud entering the combustion chamber suddenly becomes thoroughly saturated with a highly inflammable gas, mixed with an ample supply of air. Under these conditions the gas is raised to its ignition temperature with great rapidity, and the flame produced is propagated with intense speed throughout the atmosphere of fuel and air entering the furnace; all of which is simultaneously subjected to the same action. With the intense degree of heat thus generated, not only is the temperature of the furnace maintained to stimulate further combustion but the particles of fixed carbon, or flecks of coke, left behind after the volatile gases have been driven out of the coal, have their temperature raised with great rapidity to their temperature of ignition and so are most speedily burned, leaving behind the non-combustible matter to be more or less effectively taken care of in a properly designed furnace, or to give great trouble in furnaces where its importance has been ignored."

John A. Stevens emphasized the matter of stand-by losses. In New England factories running on one shift of 9 hr. a day, he said, the stand-by coal required in the best hand-fired plants ranged from 20 to 25 per cent of the daily consumption. This decreases with more shifts, or with continuous runs of, say, 72 hr., as in paper mills. With stoker-fired boilers there was a loss in running full load right up to washing-up time, usually 10 min. before the quitting hour, and also when burning a bank of coal on the grates and then rejecting it.

W. F. Verner, mechanical engineer Ford Motor Co., Detroit, gave estimates that had been prepared covering the comparative costs of operating six 2400-hp. boilers at the Ford Motor Co.'s blast-furnace plant with pulverized fuel and with stoker fuel. The estimated cost for the pulverizer equipment and buildings was $691,000, and for a corresponding stoker plant $475,000. The cost of pulverizing per ton, including fixed charges, power, maintenance, lubricants, etc., and labor (at $8 per day) was $0.76; for transmission from pulverizing building to boiler room, $0.25; and for boiler room, $1.13; or a total of $2.14. For a corresponding stoker plant the figures were: For transmission from breaker building, $0.24; boiler room, $1.66; total, $1.90. For a plant with twelve 2400-hp. boilers the total for the pulverized coal installation was $1.63, and for the stoker equipment, $1.49. These figures, in connection with the higher estimated efficiency of the pulverized fuel plant, indicated for it a saving of 4 per cent over the stoker plant.

Danger of Rainbow Chasing and Agitation

President of Illinois Manufacturers' Association Describes the Perils of Prosperity and Unsound Economic Ideas—Some Leaves from History

Our Country First Conference, a national meeting held under the auspices of the Illinois Manufacturers' Association at the Congress Hotel, Chicago, on Sept. 8 and 9, was called for the purpose of bringing representative business men and labor leaders together to discuss the present unsettled economic situation and to arrive, if possible, at some sane course of action to prevent disastrous social experiments and disturbances. In his address of welcome, Dorr E. Felt, president of the Illinois Manufacturers' Association and president of the Felt & Tarrant Mfg. Co., Chicago, pointed out that neither the present causes of unrest nor the various radical economic theories are new. On the contrary, most of the proposed experiments have been tried and found wanting in the past. The pressing need of the moment, he said, is sanity and sincere co-operative effort on the part of all classes of Americans. His address in part follows:

"It is proverbial that it requires more character to stand prosperity than adversity. America is now undergoing the test imposed by prosperity complicated by the disturbance of men's minds caused by the war.

"At present our greatest danger rests in the possible acceptance of Utopian theories and the attempt to apply in times of peace artificial industrial and legislative measures which, no matter how necessary and excusable in war time, are not practicable under peace conditions when public sentiment will not sanction increased national indebtedness and excessive taxation. Stimulants and palliatives administered during the stress of war may be disastrous if the dosing is continued under normal conditions.

"New Thought" Ideas Old

"The proponents of most of the so-called new thought ideas who talk so much about looking forward are not taking the trouble to look backward or they would know that practically all of their supposedly new discoveries are not new at all and have been tried out time and again in many countries with unhappy results. In the matter of prosperity, legislation will not take the place of honest work and capable management.

"Arbitrary price fixing during peace times has always resulted in the stopping or restriction of production and ended in conditions of great distress and scarcity of the necessities of life. A Roman emperor, 301 years after Christ, attempted to reduce the cost of living by establishing a maximum price on nearly 1000 commodities. The result was stagnation, higher prices and bloodshed, so that the producing factors of society had to start all over again to rebuild in normal and natural ways.

"Profit-sharing and workers' participation in management, which began in Great Britain about 1835 and culminated about 1885, has been the subject of numerous official reports in England which treat of nearly 300 attempts by such means to eliminate friction between employer and employed and to put a stop to restriction on output by the workers. These reports show that in a majority of cases such efforts were a complete failure. During good times and in the case of firms having more efficient managers than their competitors or neighbors such arrangements, in some cases, seemed to work well; but, in the stress of hard times not only was the friction between employer and employed increased but various other kinds of friction developed. For instance, the workmen blamed the selling force for not securing orders and the selling force alleged that the workmen produced inferior goods at too great a cost. Each craft involved in production magnified in its own mind its own importance to the industry and right to greater participation in the profits.

Our Experience in 1837

"The greatest panic and disaster ever experienced in this country was that of 1837 following a period of great expansion and prosperity during which the Federal Government and numbers of the States attempted to legislate prosperity to every one. State and Federal promotion and ownership of railroads, canals, banks and other enterprises had been the order of the day. Some States projected as many as half a dozen railroads each. Speculation and struggle for favoritism ran riot, taking the place of honest construction and production in many parts of the country, ending in prices for the necessities of life much greater in proportion to wages than at the present. The word 'profiteer' had not then been coined, but the word 'extortionist' was in everybody's mouth. Great mobs gathered in Philadelphia, New York, Boston and other cities. New York warehouses were broken into by a mob which distributed flour to all comers, immense quantities of it being destroyed and spread over the pavement of the streets, the sequel being immediate higher prices for flour resulting upon the dissipation of the necessary stocks stored by men who were, even in that day, called 'hoarders.'

"Will it be necessary, as a result of false teaching by men who never filled a pay envelope and who know little or nothing from a practical standpoint of economic questions, that this generation, now so prosperous, will have to learn its lesson which common sense and a little reading of history might teach without the dire results which are sure to follow if we put into practice the theories promulgated by star gazers?

Conservative Attitude of English Workmen

"In a recent visit to England, during which I discussed some of these supposedly new theories with many workers and employers, I observed in the minds of a majority of the workmen a distrust of Utopian ideas. There was complete disagreement in the theories put forth by different prominent sociological and radical labor leaders as to what kind of medicine should be administered to quiet the great social unrest so much talked about last spring. Among the workers, there was an evident preference for substantial shillings in a pay envelope to an uncertain caramel to be tossed to them at Christmas. Many of our own labor leaders seem to take the same view with respect to suggested palliatives that can afford no substantial nourishment during the hard times which dosing with quack medicine will very likely bring on. At present we have in this country a number of notable examples of industrial conflict taking place in works where all strife was supposed to have been eliminated by large doses of paternalism.

"There is not as much discontent as the vendors of news would lead us to believe and most of what there is is manufactured. The great strikes in the Northwest and in Canada were called where the wages were abnormally high and living costs and conditions excellent. This has been true in the case of many other recent strikes in this country. There has always been more industrial strife during prosperity than during hard times.

"It would be disastrous for the working people to demand laws conferring on them special privileges and at the same time absolving them from the ordinary responsibility for their own acts. In France they have

just passed a law pertaining to collective agreements between employer and employed which provides for the legal enforcement of such agreements and the right of either association to sue and be sued.

Danger of Dissipating Resources

"Much academic theorizing is leading us away from a clear understanding of economic truths. We are in danger of dissipating the great resources, the industrial and commercial ability of our country. Regardless of the wild socialistic and revolutionary ideas which have been preached to the people of Europe during the last 12 months by the most energetic and widespread propaganda of recent times, all classes appear now to be recovering their sanity.

"The ultimate effect of the necessary interference of the Government in industry and transportation for the successful prosecution of the war does not seem to be considered by many. The Government had to procure, regardless of costs, immense quantities of the products of the farm, the mills and the factories, at a time when many men were being withdrawn from their usual vocations. The result is a large national debt and heavy taxation. During war a country must mortgage its future, and the payment of that mortgage is sure to be felt, sooner or later, by every one of its people. Doubtless America will feel it less than any of the other countries which placed large armies on the battlefields of western Europe.

"I believe that if we exercise common sense and avoid chasing the rainbow, the effect of the war will not result in any great hardship in America, but that continual rainbow chasing and agitation will result in grave distress."

Program for the Philadelphia Meeting of the American Foundrymen's Association

The program for the twenty-fourth annual meeting of the American Foundrymen's Association, to be held in Philadelphia, Sept. 29 to Oct. 3, has been provisionally prepared as follows:

Monday, Sept. 29

10:00 a. m.—Registration, Commercial Museums.
10:00 a. m.—Opening of Exhibition of Foundry and Shop Equipment, Commercial Museums.

Tuesday, Sept. 30

10:00 a. m.—Opening joint session with Institute of Metals Division of American Institute of Mining and Metallurgical Engineers, Ball Room, Bellevue-Stratford Hotel.
11:30 a. m.—Opening session, A. F. A., Ball Room, Bellevue-Stratford Hotel.

Wednesday, Oct. 1

10:00 a. m.—General Session, Ball Room, Bellevue-Stratford Hotel.
10:00 a. m.—Steel Session, Clover Room, Bellevue-Stratford Hotel.

Thursday, Oct. 2

10:00 a. m.—Gray Iron Session, Ball Room, Bellevue-Stratford Hotel.
10:00 a. m.—Malleable Session, Clover Room, Bellevue-Stratford Hotel.
10:00 a. m.—Industrial Relations Session, Red Room, Bellevue-Stratford Hotel.
7:00 p. m.—Annual Banquet, Bellevue-Stratford Hotel.

Friday, Oct. 3

10:00 a. m.—General Session, concluding with Installation of Officers, Ball Room, Bellevue-Stratford Hotel.

The papers and reports to be presented are:

Iron Foundry Problems

Annual address of the president, A. O. Backert.
Annual report of the secretary-treasurer.
Annual report of board of directors of A. F. A., Inc.
Report of A. F. A. Committee on Foundry Costs, by J. Roy Tanner, chairman, Pittsburgh Valve Foundry & Construction Co., Pittsburgh.
Publicity Work of Foundry Equipment Manufacturers' Association, by Franklin G. Smith, chairman publicity committee, Foundry Equipment Manufacturers' Association, Cleveland-Osborn Mfg. Co., Cleveland.
A Note on Britain's Experimental Foundry, by G. Ernest Wells, Edgar Allen & Co., Sheffield, England.
The Elimination of Strains in Iron Castings, by C. J. Wiltshire, General Electric Co., Schenectady, N. Y.
The Value of a Scrap Pile, by Henry Traphagen, Toledo Steel Castings Co., Toledo, Ohio.
The Electric Furnace as an Adjunct to the Cupola, by George K. Elliott, Lunkenheimer Co., Cincinnati.
Report of A. F. A. Committee on General Specifications for Gray Iron Castings, by Dr. Richard Moldenke, Watchung, N. J.
Side-Blow Converter in Iron Foundry, by George P. Fisher, Whiting Foundry Equipment Co., Harvey, Ill.
Cerium in Cast Iron, by Dr. Richard Moldenke, Watchung, N. J.
Oxygen in Cast Iron, Wilford L. Stork, Detroit Valve & Fittings Co., Detroit.

Steel Foundry Problems

Electric versus Converter Steel, by John Howe Hall and G. R. Hanks, Taylor-Wharton Iron & Steel Co., High Bridge, N. J.
Effect of Sulphur in Steel Castings, by Prof. A. E. White, University of Michigan, Ann Arbor, Mich.
Repairing Castings on Transport Northern Pacific, by Arthur F. Braid, Metal & Thermit Corp., New York. Illustrated with motion pictures.
Comparison of Costs of Electric and Open-Hearth Furnace Practice, by E. H. Ballard, General Electric Co., West Lynn, Mass.
Report of A. F. A. Committee on Steel Foundry Standards, by W. A. Janssen, chairman, Canadian Steel Foundries, Ltd., Montreal, Que.
Operation of the Acid Electric Furnace, by L. B. Lindemuth, Carney & Lindemuth, New York.
Temperature Control in Electric Furnace, by F. W. Brooke, Electric Furnace Construction Co., Philadelphia.
Investigation of Steel Castings on German Submarines, by Prof. William Campbell, Columbia Unviersity, New York.

Malleable Foundry Problems

Burning Fuel Oil in an Air Furnace, by J. P. Pero, Missouri Malleable Iron Co., East St. Louis, Ill.
The Application of Powdered Coal to Malleable Annealing Furnaces, by Charles Longenecker, Bonnot Co., Pittsburgh.
Efficient Use of Pulverized Coal in Malleable Foundry Practice, by Milton W. Arrowood, Ground Coal Engineering Co., Chicago.
Powdered Coal as a Fuel in the Foundry, by H. A. Grindle, Combustion Economy Corp., Chicago.
Relation Between Machining Qualities of Malleable Castings and Physical Tests, by Edwin K. Smith and William Barr, Wisconsin Malleable Iron Co., Milwaukee.
The Refining of Cupola Malleable in the Electric Furnace, by A. W. Merrick, General Electric Co., Schenectady, N. Y.
Report of A. F. A. Committee on Specifications for Malleable Castings, by Enrique Touceda, chairman, Albany, N. Y.
Methods for Determining When Malleable Iron Is Over or Under Annealed, by W. P. Putnam, Detroit Testing Laboratory, Detroit.
Malleable Castings, by Prof. Enrique Touceda, Albany, N. Y.
Effects of Annealing Gray and Malleable Iron Bars in Copper Oxide Packing, by H. E. Diller, *The Foundry*, Cleveland.

Industrial Relations

Training Men for Foundry Work, by C. C. Schoen, Training Section, U. S. Department of Labor, Washington, D. C.
Personnel Problems of Modern Industry, by C. D. Dyer, Jr., Commercial Trust Building, Philadelphia.
Industrial Democracy and the Foreman, by John Calder, Business Training Corp., New York.
Report of A. F. A. Committee on Safety, Sanitation and Fire Prevention, by V. T. Noonan, chairman, U. S. Mutual Liability Insurance Co., Quincy, Mass.
Vocational Training for Foundry Occupations, by J. C. Wright, Federal Board for Vocational Education, Washington, D. C.
Safety Appliances and Welfare Work in Foundries, by F. G. Bennett, Buckeye Steel Casting Co., Columbus, Ohio.

Handling Materials

How to Secure Best Results in Combining Hoisting Apparatus with Molding Machines, by W. C. Briggs, Shepard Electric Crane & Hoist Co., New York.
Foundry Sand-Handling Equipment, by H. L. McKinnon, C. O. Bartlett & Snow Co., Cleveland.
Concrete Foundry Molding Floors, by H. H. Haley, American Foundry Equipment Co., New York.
The Care of Foundry Equipment, by G. L. Grimes, Grimes Molding Machine Co., Detroit.
Uniform Methods of Cost Accounting, by C. E. Knoeppel, C. E. Knoeppel & Co., New York.
The One Best Way to Do Work, by Frank B. Gilbreth, Providence, R. I. Illustrated by motion pictures.
The Testing of Clays for Foundry Use, by Homer F. Staley, Bureau of Standards, Washington.
The Economical Control and Handling of Patterns in a Large Foundry, by W. D. Jones, Canton Steel Foundry Co., Canton, Ohio.
Progress in the Application of Electric Arc Welding, by Robert E. Kinkead, Lincoln Electric Co., Cleveland.
A New Cutting Gas, by Alfred S. Kinsey, Air Reduction Sales Co., New York.
Welding Castings of Different Metals and Different Sections, by George B. Malone, Bayonne Steel Casting Co., Bayonne, N. J.
Report of the A. F. A. Committee Advisory to the United States Bureau of Standards, by Dr. Richard Moldenke, Watchung, N. J.
High Temperature Cement for Lining Furnaces, by W. S. Quigley, Quigley Furnace Specialties Co., New York.
Considerations Affecting Brass Melting in the Gray Iron Shop, by Russell R. Clarke, Eagle Brass Foundry, Seattle, Wash.
The Weeks Electric Brass Furnace, by F. J. Ryan, Philadelphia.
Audible Signals in Foundries, by Prof. Vladimir Karapetoff, Ithaca, N. Y.

The various meetings are to be held at the Bellevue-Stratford Hotel. The regular exhibition will be found at the Commercial Museums. An entertainment program has been provided by the local committee. Special entertainment will be provided for the ladies. Arrangements also will be made for visiting foundrymen who wish to inspect plants in Philadelphia and vicinity.

JUDGE GARY'S VIEWS

Labor Problems, League of Nations and Trade with Germany Discussed

Judge Elbert H. Gary discussed "Reconstruction and Readjustment" from many angles before the annual meeting of the American Bar Association at Boston last week. He advised the acceptance of the League of Nations, resumption of trade with Germany and Austria, generous accommodation of foreign countries in the matter of credits, and leniency of the law as to big corporations and combinations. He said:

"The major part of the people of this country love peace and abhor war, and, therefore, favor the peace treaty and League of Nations as a material aid in preventing future prolonged wars. They believe that, under the most difficult and complicated circumstances, the President, as their properly constituted leader and representative, secured the best terms and conditions practicable and that the same should be approved."

With regard to resumption of trade relation with our war enemies, he said: "It is not necessary to forget or to forgive—certainly unless there is repentance on the part of those who are guilty of moral turpitude, but we should, at least, be sufficiently wise to consider the ultimate effect upon our own interests of unnecessary antagonisms. From an economic standpoint, considering of paramount significance the question of benefit to ourselves, we ought to resume business relations with Germany and Austria at once."

In regard to financing trade he remarked:

"The United States, so far as possible, should finance other deserving countries less fortunate in rehabilitating their productive capacity and resources, and we should purchase their products up to the limit of our ability. Our investing capitalists, through bankers and otherwise, should buy the securities of foreign concerns, the payment of which might be guaranteed by their respective governments. The early adoption of the American dollar as a basis or standard of currency and values is worthy of universal consideration."

As to the commercial rivalry of nations he said: "The contest for commercial position and progress will be fiercer than ever before, with the difference, it is hoped, that there will be hereafter an international tribunal which will exercise supervision over the conduct of individual nations and will restrict all of them within the limits of law, reason, propriety and justice. Heretofore, wars have generally resulted from economic rivalries; from the struggle for commercial supremacy; and the late wars, in the opinion of many of us, were no exception."

He made the following comments on labor:

"The labor question at present is of commanding interest, first because labor is essential to economic growth and virility, and second because it is persistently sought by self-appointed leaders to enlist the sympathy and support of workmen in agitation for the substitution of the rule of force for the rule of law and reason. It is commonly designated as Bolshevism. These agitators will not succeed in the United States. I have heretofore spoken on this subject and will not repeat. However, it may be observed that the antidote for this poison is plenty of work at reasonable rates of compensation when compared with the cost of living; healthful, safe and agreeable working conditions; opportunity for workmen to advance in positions according to merit; and a chance to invest their savings in the business with which they are connected. The employers must not and will not give the employees good ground for complaint, and intelligent public sentiment will exercise controlling influence in preventing a return to barbarism. Employers and employees are under equal responsibility to the general public, of which they are an important part, to assist in maintaining industrial peace and prosperity."

As to the cost of living he stated: "If and when we adopt the methods of some of the European countries in regard to quality and condition of articles sold for consumption, and require rigid public inspection, together with reasonable and systematic control of the necessities of life, we shall witness great improvement in health and material reductions in the cost of living. We are making some effort in this direction."

The speaker disapproved of Government ownership, claiming that private ownership would run an enterprise more economically and with an eye for lessening expenditures. He suggested that in case of a wrongdoing trust it might be better to have the law so framed as to cover the whole subject by injunction, rather than by dissolution.

Wartime Activity in the Valleys

YOUNGSTOWN, OHIO, Sept. 9.—Demand for steel has forced pig-iron output in the Mahoning Valley to peak war production rate, with a similar condition in the Shenango Valley. The Republic Iron & Steel Co. ordered in Hannah furnace at the Mahoning Valley works this week. This is a detached stack suspended last winter when orders dropped off. With this furnace producing, the Republic company's daily pig-iron output in Youngstown will approximate 3000 tons. All five furnaces in the Haselton group at the Youngstown works are running. In August, No. 2 stack in the Haselton battery averaged 570 tons daily. During a shutdown early in the year, this furnace was overhauled and its capacity enlarged. It was formerly a hand-filled stack with a 400-ton daily rated capacity. Improvements including an electric skip have promoted it to the 500-ton class.

Sept. 3 Anna furnace at Struthers, Mahoning County, operated by the Struthers Furnace Co., Cleveland, resumed on foundry iron. Before suspension early in June it operated on basic. This stack, the only merchant furnace in the Mahoning Valley, was overhauled and modernized. Preparations are also being made to light the detached Niles furnace of the Carnegie Steel Co. at Niles, Ohio, idle since early in the year. This will leave only one idle furnace of 25, Grace of the Brier Hill Steel Co., which is being relined after a continuous run of seven years, during which it produced over 1,000,000 tons.

Valley production of pig iron is now about 11,000 tons daily, while consumption of ore averages 22,000 tons per day, or nearly 700,000 tons per month. Pig-iron production in the Valley is now well up to capacity production of a year ago when 24 furnaces were producing. At that time the new Jeannette furnace of the Brier Hill Steel Co. had not been started.

Production of finished products is now the heaviest peace-time output in the history of the district. All plants are operating close to 100 per cent, except where shortage of skilled men, such as sheet-mill workers, reduces output.

Mr. Butler on Ore Conditions

On return from an inspection of ore properties of the Brier Hill Steel Co. in the Lake Superior region, Joseph G. Butler, Jr., vice-president, stated indications are that ore which has remained undisturbed on the docks for years will be moved before spring. No shortage at Valley furnaces is in prospect, however, as ore bins are well filled and the inbound movement from the docks will continue all winter. "The docks need cleaning up," said Mr. Butler, "for there are accumulations of ore on them that have been there for years. They will be the better for a cleanup." Mr. Butler said ore production in the Lake Superior districts will be 10,000,000 tons less this year than last. "The United States Steel Corporation has been moving the usual amount of ore during the present season," he stated. "The curtailment took place in shipments to the independents. There is no labor trouble at the mines and very little at the Lake Superior docks." It is expected there will be a heavy pull on stock piles at the furnaces this winter because of heavy metal production.

The Pennsylvania Tank Car Co., Sharon, Pa., has received orders for 156 cars, 100 for the Livingston Refining Co., 25 each for the Bolene Refining Co. and the Commercial Car Line and six for the Wilhoit Refining Co.

SCHOOLS MAY BUY MACHINE TOOLS

House Bill Names 10 Per Cent of Cost as Price—Senate 20 Per Cent

WASHINGTON, Sept. 9.—The House has passed the Caldwell bill providing for the sale of surplus machine tools to schools and universities at 10 per cent of their cost. The Senate has already passed a similar bill, sponsored by Senator Wadsworth of New York. This latter bill, however, provides that the Government shall receive 20 per cent of the cost of the tools. The measures will now probably go to conference for an agreement on this difference. Both bills provide that the freight shall be paid by the schools receiving the machine tools.

The report of the Committee on Military Affairs favoring the bill declared that the public sale of these tools "would result in low prices; it would flood the market and demoralize industry, in many places closing down factories."

"I had supposed," said Representative Anderson, "that the Attorney General was now engaged in a campaign to reduce prices, not only of food, but of machine tools and of everything else, and I was wondering whether the gentleman from New York was interested in keeping up the prices of these articles."

"Not to the extent that the gentleman's question would indicate," replied Representative Caldwell, "but certainly to the extent of preventing a loss to our Government. The circumstances are these. The Government stimulated the production of machine tools in order that it might take care of its own requirements and those of our allies in the late war, and they accumulated an enormous mass of material. While they were doing that they built up in this country something that we never had before, and that was a skilled trade sufficient to take care of our requirements—able to do this kind of work.

"Now if we absolutely kill the business, if we shut down all the factories producing these tools, and the men who have learned the art go into other arts, we will lose one of the great benefits that came from the war.

"Now this bill, further answering the gentleman's question, not only tends to keep alive the art in a commercial way, but it tends to establish schools all over the country from which we could draw skilled artisans in the event we need them in the future.

"Our greatest weakness when we entered the war was that we did not have the material to make war with, nor did we have the machinery to make the material. We did not have the tools with which to make the machinery to make the material and we did not have the men to run the machines with which to make the tools that made the machinery for the war. It was a good deal like the house that Jack built, when you get clear back to the question. We were apparently in a hopeless condition, but we have educated these men and I think that if we do this we will probably be able to keep the art in commercial activity and give some employment to a certain class of these men who have learned this trade and in that way benefit our country all round. That was my idea. The report was written by myself."

Mr. Anderson, in reply, conceded "the gentleman is making a very good speech on the theory of protection of home industries, but the kind of protection he proposes is somewat camouflaged. What the gentleman says simply illustrates the impossibility of getting results in the way of lowering the high cost of living by a campaign of psychology and bluffing, such as has been inaugurated by the Attorney General in the face of positive efforts to keep articles off the market, such as this report discloses."

"I just want to say," said Chairman Kahn of the committee, "that the committee considered this legislation very carefully. There is a great quantity of this machinery on hand. It was thought at first that it might be a good thing to present it to the schools, but the War Department showed that if that course were pursued, they would have to send officers to the various schools to inspect the machinery to see that it is kept in good repair and in proper use. They suggested the amendment so that we would be permitted to sell the machinery for a nominal sum to the educational institutions. The Government cannot use it. It will serve a beneficial purpose to the schools and I hope the bill will pass."

An effort was also made in the House to secure unanimous consent for the consideration of the bill directing the Interstate Commerce Commission to investigate the substitution of steel and other materials for timber for railroad ties. Objection was made, however, and the bill went back to the calendar.

Large Willys Corporation Organized

The Willys Corporation, New York, has been organized with a capital of $25.000,000 to manufacture a new six-cylinder automobile. The plants of the Duesenberg Motors Corporation at Elizabeth, N. J., and at Poughkeepsie, N. Y., have been acquired and will be enlarged. The Elizabeth plant will be made the main unit, about 15 acres adjoining the Duesenberg plant having been secured under option for the purpose of erecting proposed additions to the present factory buildings. It is expected that this unit will eventually employ a force of about 8000.

The Electric Auto Lite Co., Syracuse, and the New Process Gear Co., Rochester, have been acquired by the Willys Corporation. Mr. Willys states that these two concerns will continue as distinct units and will not in any way lose their identity in the new corporation. The general automobile parts units of both concerns will be continued and expanded. The supplying of lighting and starting systems, gears and transmission sets for the new car to be manufactured by the Willys Corporation will be only a small portion of the parts which these corporations supply to various automobile companies.

The Auto Lite Corporation will continue also to expand the manufacture and sale of the Willys light, a farm lighting equipment which makes use of the Knight sleeve valve motor.

A. O. Backert Addresses New England Founders

A. O. Backert, president American Foundrymen's Association, Cleveland, addressed the September meeting of the New England Foundrymen's Association in the Exchange Club, Boston, Sept. 10, on the subject, "Itinerary of Recent Travels Through France and England." Mr. Backert a few months ago motored over the battlefields of France, visiting a number of destroyed cities, towns and villages, which he described. He also presented a brief survey of the industrial situation in both France and England, particularly as applying to the iron, steel and foundry industries, and the question as to what part Germany is going to take in the export trade and industrial development of the future was discussed.

Secretary of War Baker has sent to Congress the report of Maj. Gen. W. M. Black, chief of engineers, disapproving of the proposition to spend $1,050,000 for the construction of three locks and dams on the Youghiogheny River at McKeesport, Pa. The district engineer of the department, Lt. Col. H. W. Stickle, had reported in favor of at least a partial improvement of the river to be justified in the interest of the development of river traffic on the Monongahela and Ohio rivers.

T. P. Walls Tool & Supply Co., Inc., 75 Walker Street, New York, has been appointed sales agent for the Advance Tool Co., Cincinnati, and the Maxf Grinding Wheel Corporation, Chester, Mass. The former manufactures milling and gear cutters, reamers, end mills and lathe mandrels and the latter grinding wheels.

"Colloidal Fuels" is the title of a pamphlet by Linden W. Bates, 141 Broadway, New York, which discusses their relation to coal, to the production of power and heat and to fire prevention and insurance.

Export Trade and the Metric System

No Difficulties in Meeting Foreign Inquiries Expressed in Metric Units—Intermixture of Metric and English Units Common.

BY K. G. MARTIN*

IN all the furor that rages with periodic violence on the great question of whether the metric system is "to be or not to be," it may be worth while, as far as America is concerned, to pause occasionally and consider one or two of the practical ends in view.

Since the metric system may be considered a foreign manifestation we may be pardoned for viewing the matter from an export point of view. In fact, the matter of the metric system may prove of a great deal more importance in our export trade than it ever will as a platform plank in our domestic commercial politics.

The thing furthest from our thought at the moment is to enter into a discussion or even express an opinion as to the comparative value of the metric or English systems, and, in fact, to be quite frank, as far as personal opinion is concerned, it is quite a 50-50 proposition and we leave to the pamphleteers and the trade paper Bolsheviks the settling of the question.

In every-day export business, especially in the iron, steel and manufactured products sphere, from sheets to locomotives, the matter of metric measurements is one of present and practical moment. In dealing with our foreign customers we are faced with facts, not theories, and are interested not so much in arguments for or against as in those concerning the selling of the product itself.

No Widespread Demand for Metric Sizes

There is, then, no general insistent and widespread demand on the part of foreign purchasers for deliveries of steel or its products in metric weights, sizes and measurements. Certain areas without question desire their deliveries in the metric system and at least persist in asking for quotations on that basis. With the present condition of the market, however, they are almost universally satisfied to accept our products rolled, cut or otherwise fabricated to the nearest English equivalent to the metric dimensions given. As long as the customer is thus satisfied with the mill products there seems no reason, as far as the export trade is concerned, to ask the mills to adopt any revolutionary and permanent change. Wherever necessity demands, however, and where the business warrants, our experience has always been that the mill or manufacturer will produce to the metric standards.

Where the matter of a metric measurement, such as the thread, is an inherent quality of the object no question arises, nor is there any difficulty arising in the question of machinery and plant equipment for installation in foreign countries to turn out products to metric dimensions. In the case of such items as rails, nails, plates, etc., the inquiry received in metric standards is transposed to English equivalents and the mill quotes the export house accordingly on an ordinary domestic basis. In some cases English equivalents are standard the world round, as in the case of tin plate, but this has been a natural development owing to the practical control of the tin-plate industry by America and England. Again, pipe threads are nearly always requested and quoted on our own familiar basis.

No Confusion with Dual Use of Systems

It is a peculiarity of this metric-English question that while the sizes may be largely inquired for in English measurements by certain export areas, the weights will nearly always be specified in the metric system. In fact, a great many orders are handled which involve a dual use of the systems and there seems to be no confusion or difficulty arising out of these contracts. Cases have occurred of the supplying of a complete plant to a foreign purchaser where all dimensions were received in metric equivalents while the shipments made, which were entirely agreeable to the customer, were, as far as the pre-fabricated buildings, engine and machine bases, power plant, etc., supplied to the nearest English equivalents, whereas the machine equipment was to manufacture a metric product. The combining of both systems in use side by side is not, therefore, uncommon.

Exporter Has to Deal with Other Systems

We must not forget that there are other units of weights and measures in use besides the metric and English, such as those employed in Russia and China which are far more ancient and time tested than either the metric or English systems and the American exporter has to be prepared to deal with them at any time. And let it not be forgotten that there are more than one set of wire gages.

To the exporter of steel and metal products of all descriptions, therefore, the exclusive adoption of either system or retention of our present mixed use of the two is far from one of his most pressing problems. If the demand becomes sufficiently insistent the American manufacturer will, business conditions warranting, meet the demand with completely metrically measured products.

During the operations of the American Expeditionary Forces in France many large motor transports, railroad and ordnance shops were operating with mixed American and French machine-tool equipment and supplies without disaster or even undue difficulty. The taking over of practically all American equipment by the French will still further bring about the inter-use of the two systems and the de-standardization of either one. In fact, the time seems about right for some mechanically inclined genius to develop an "Esperanto" system of weights and measures which will combine the advantages of each to the confusion of all!

*Manager service department American Steel Export Co., New York, and recently returned from service in the army in France.

New Tube Sales Company

The Superior Tube Co., Kansas City, Mo., is a new sales company organized for the distribution of pipe. Yards have already been established in a number of the principal oil fields and some very desirable contracts for pipe have been made with mills in the Pittsburgh district. Hoyle Jones, president and treasurer, has been for 10 years manager of sales at Kansas City for La Belle Iron Works. J. D. Holloway, vice-president and secretary, is in charge of the Pittsburgh office at 1209 Chamber of Commerce Building, from which point all purchase orders will be placed and contracts negotiated. He was formerly Pittsburgh manager of sales of the Wheeling Steel & Iron Co. L. W. Kile, vice-president and manager of sales, who is in charge of the company's interests in Oklahoma and Texas, with headquarters at 405 Exchange National Bank Building, Tulsa, was formerly president of the Moore-Kile Co., Tulsa, whose interests have been taken over by the new organization. The company has purchased the unfilled order book of the Moore-Kile Co., which represents a substantial tonnage on the books of several tube mills. In addition to this the company placed some rather large contracts several months ago, after the organization was assured, with the result that it had a "going" business when it began operation on Aug. 15.

The Loyal Motor Truck Co., Erie, Pa., manufacturer of ¾ and 1-ton trucks, is now located at 217-218 Marine Bank Building, Erie.

Pittsburgh Chamber of Commerce Defends the Pittsburgh Basing Point

The Pittsburgh Chamber of Commerce has shown its interest in the matter by taking action favoring the retention of Pittsburgh as the sole basing point for United States prices on iron and steel products. In a series of resolutions adopted, this general organization of business men gives reasons why, in its opinion, to have two or more basing points would work injury to the industry as a whole. The matter was handled by the Trade and Commerce Committee and the Transportation and Railroads Committee, and the resolutions adopted by these two committees were accepted by the Chamber, and have been sent to the Federal Trade Commission at Washington.

The resolutions recite that the Pittsburgh district has always been the largest producer of iron and steel in the United States; that therefore, by common usage it has been the practice of all manufacturers of iron and steel to make Pittsburgh the basing point for prices; that this practice existed many years before the United States Steel Corporation and other large steel interests were organized or located in the Chicago district; that a basing point is a trade necessity looking to the development, stimulation and stabilization of business and is necessary to enable the buyer to compare quotations; that in establishing a basing point we are removing, as far as possible, obstacles to the free movement of merchandise from manufacturer to consumer, as when all prices are quoted f. o. b. the basing point a comparison of prices is all that is necessary, the freight being equalized; that two or more basing points will work an injury to industry as a whole, will mean a division into districts and interfere with the buyer placing his orders to advantage with the manufacturers best fitted to meet his needs, thus restricting competition; that Pittsburgh, first the sole basing point, is the foundation of the steel industry, and, by reason of location and tonnage output, is the logical sole basing point, will always remain a basing point, and as two or more basing points tend to restrict competition, it should remain the sole basing point. It was therefore resolved "that the Chamber of Commerce of Pittsburgh file with the Federal Trade Commission its formal protest against any change being made in the sole use of Pittsburgh as a basing point in naming prices on iron and steel."

The Chamber of Commerce of Steubenville, Ohio, has indorsed the action of the Pittsburgh Chamber and will also forward its protest to the Federal Trade Commission. Steubenville is in the Pittsburgh industrial district, and its main industry is steel.

Buys Rolling Mill

The New Process Iron & Steel Co., Noblestown, Ind., has purchased the old iron rolling mill at Wheatland, Pa., built in 1872 and last operated in 1908 by the Shenango Iron & Steel Co. The plant will be dismantled and machinery and equipment moved to Noblestown. It was purchased from Max Solomon, Pittsburgh. In the early years of the iron industry, it was one of the most important mills in western Pennsylvania. The plant consists of three buildings, 90 x 250, 60 x 250 and 100 x 250 ft., equipped with a 24-in. mill. Between 1000 and 1200 tons of steel will be included in the shipment.

Westinghouse Home Building Project Started

On account of the great difficulty experienced for the past several years by employees of the Westinghouse Electric & Mfg. Co. in finding suitable homes near the works of that concern at East Pittsburgh, the company has actively resumed the home building plan for its employees that was postponed during the war, and 48 houses are now under construction. The site for these is on a plot of 109 acres owned by the company and located in Wilkins Township, along the Ardmore Boulevard, and in close proximity to the works. These 48 houses will form a part of the general building plan for developing the entire tract. It is estimated this tract will furnish homes for 600 families. Sidewalks and paving will be laid and gas, water and electricity will be installed. The houses, which are modern in construction, will be of brick with hollow tile backing, with concrete cellars and cement porches.

Development of the American Merchant Marine

Statistics prepared by the United States Shipping Board show the manner in which the American merchant marine is gradually forging to the front. During the month of June, 293 vessels flying the American flag steamed out of American ports, carrying 1,177,444 tons of cargo. Of this number 243 went out of Atlantic ports, 33 from Gulf ports and 17 from ports of the Pacific. During the entire year of 1914 the total value of domestic exports carried in American bottoms was $166,055,061. In the same period foreign vessels carried out American shipments to the value of $1,861,735,581, or 91.8 per cent of the total value. In June of 1919 American ships carried domestic exports valued at $268,228,502, or in one month $192,173,421 more than was carried in the entire year of 1914.

As against the $268,228,502 value of domestic exports carried in American bottoms during the month of June, foreign ships during the same period carried American exports to the value of $540,424,846, a wide difference from the 91.8 per cent they were carrying in 1914. Even up to 1917 only 14.6 per cent of our exports was carried in American ships.

Out of 512 steamships requisitioned by the Shipping Board for war purposes, 478 have been released, totaling 2,727,421 deadweight tons. This does not include 87 Dutch ships with a deadweight tonnage of 579,975, which also have been turned back.

New Steel Car Plant

William Wilkoff, president Youngstown Steel Car Co., Youngstown, Ohio, announces that work has started on a new plant at Niles, Ohio, for repair and manufacture of steel cars of narrow and standard gage. The two initial units will consist of brick and steel buildings, each 80 by 400 ft., with tile roof, one for repair of cars with an average daily capacity of 25, and the other for construction of cars for use by industrial companies. The plant will be served by a 400-ft. steel crane runway with a 10-ton electric crane. Later two additional units will be constructed for manufacture of standard gage cars. The Youngstown Steel Car Co. has a 130-acre site at Niles, of which 105 acres will be used for plant and sidings and 25 for housing development.

Sheet Mills Very Busy

YOUNGSTOWN, OHIO, Sept. 9.—With district mills well booked for the rest of 1919 in all finished products, attention is being directed to the first quarter of 1920 and prices to be quoted. Indications point to sharp advances in many finished lines. Some spot business is being sandwiched in between regular rolling schedules in the sheet mills, but aside from this, producers are temporarily out of the market. Naturally only the choicest specifications are being picked. It is the rule to take care of regular customers first. Some mills are still booking fourth quarter business, to fill up schedules. Tinplate inquiries are coming in steadily. One inquiry was for Hongkong, China, and called for 500 boxes of 20 x 22-in., 100 sheets per box, the boxes to be tin lined. The principal maker is temporarily out of the market.

The Chicago chapter of the American Association of Engineers is starting courses on business administration, industrial management, civics, and public speaking. The course in business administration will include functions, standards of efficiency and evolution of organization and management; the organization of a business; efficiency systems; selection of employees; training of men; and other subdivisions of the general subject. The course in industrial management will include such subjects as locating the industry, organization for operation, factory layout and equipment, control of production and control of labor.

Controversy as to Arsenal Management

Secretary Baker States Government Has Not Surrendered Any Authority to Employees—Labor Opponents of Strike in New York Dismissed by Union Official

WASHINGTON, Sept. 9.—The announcement of the War Department that the employees of arsenals had been authorized to assist in the management of these institutions has aroused considerable trouble for the department. The chief question seems to lie in the extent of authority of the employees' committee. Secretary Baker has taken particular exception to the report that these committees exercise "control" and has insisted that the department's authority is wholly undiminished by the advisory relation of the committees.

The fact that the department's publication concerning the operation of these committees came at the same time that the President announced "another footing of the wage system of the country" emphasizes the importance of the War Department action.

The question as to the power of the committees, as interpreted by Secretary Baker, seems to be largely a matter of words. At the Rock Island Arsenal, however, where the new system has made the greatest progress, these "advisory committees" have already secured the adoption of a new schedule of 4000 piecework rates. The employees at this arsenal have also elected shop foremen. The department officials strongly insist that they still have authority to refuse to accept the foremen elected by the workers, and that the mere approval, unchanged, of the employees' suggestion of piece-work rates does not diminish the authority of the department.

Because of the newspaper headline which greeted the War Department's announcement, Secretary Baker gave out a statement in which he said: "The whole purpose of the steps which have been taken is to bring about understanding and good feeling, but not in any sense to part with either the responsibility or the authority of the Government in the management of these industrial enterprises."

Five arsenals are involved in the department's program of representatives—Rock Island, Frankford, Springfield, Watertown and Watervliet. In each of these about 17,000 are at present at work. In each of these the workers have elected special committees to "advise" with the department representative. They have had two definite purposes. The first of these has been to make as permanent as possible the positions of the workers by finding peace work to take the place of war work. To accomplish this it has carried on a campaign which has resulted in turning over to the Ordnance Department about $2,000,000 worth of work for other departments of the Government. This campaign is to be kept on and it is the plan of the workers to secure some form of Congressional sanction that will make it possible to compete with private producers for Government work.

The second purpose is to increase the interest of the workers in the output of the arsenals, even to the point of cheapening production to make this competition possible. Two representatives of the workers are to be maintained in Washington. One of these is to be permanent—R. L. Cornick, of the Rock Island Arsenal; and the other is to serve three months as representative. For the first three months this task was undertaken by James L. McCort, of Frankford Arsenal, who has now been succeeded by J. H. Mulligan of the Springfield Arsenal.

Opponents of Strikes Dismissed

James P. Holland, president New York State Federation of Labor, has made public a letter dismissing John F. Pierce and S. Epstein, the committee that proposed in its report a policy of no strikes for a period of six months to aid President Wilson in reducing the cost of living. Mr. Holland says that neither of these men has at any time been delegated to make investigation relative to strikes, being appointed on a committee to investigate living costs only. They acted on their own initiative in submitting this report, which was not sent to State headquarters.

Hugh Frayne, general organizer of the American Federation of Labor, says: "No man can stop strikes, neither can any organization, so long as the causes for the strikes remain. You succeed in reducing strikes to a minimum, but you will have to stop there. No one familiar with the situation thought for a moment that the so-called report bound or spoke for the American Federation of Labor or any part of it."

Since their summary removal from the Cost of Living Committee, Messrs. Pierce and Epstein have announced their intention of continuing the fight for a cessation of strikes for six months, by direct appeal to the "rank and file." In a letter sent by them to President Holland, but which he claims to have never received, they say:

> We retract no sentence, word, syllable or punctuation mark of our Sept. 1 report. We stand upon it without excuse or apology to any man. We insist with all the force we possess that there must be a complete cessation of unnecessary strikes and increased production or the efforts of President Wilson to effect a reduction of the cost of living and replace the country on a sound business basis will certainly fail.

President Holland says that these men were removed because the report was made public without first presenting it to him and the executive committee, which is the usual course.

Worcester, Mass., Strikes

The employees of the Bay State Stamping Co., Worcester, Mass., went on strike Friday, because of the refusal of the management to grant a demand, submitted as a petition signed by all the workers, to grant a 50-hr. week and an accompanying increase in pay of 10 per cent. The refusal was on the ground that some time ago the 10 per cent increase was granted, and that the company believes that the 55-hr. week should not be reduced at this time.

The strike of the gas workers at the plant of the Worcester Gas Light Co., which has constituted a menace to manufacturing industry, continues, but gas is being produced at a rate beyond consumption, and sufficient reserve supplies are now on hand. The company has refused publicly to take back its men as a body, but will receive applications for re-employment and will take back those men whom it believes to be trustworthy. This strike is being watched with keen interest by employers throughout New England, because it followed arbitration and violated the terms of the decision of an official board, and also because it is believed the company will fight the issue to a finish.

After a strike lasting about two weeks, the employees of the Worcester Machine Screw Co., Worcester, voted to accept the terms the company originally offered them. The factory started work on Monday. The company has been working 50 hr. per week and offered to start working 55 hr. a week, paying time and a half for over 50 hr. and also to consider individually increases in pay. The original demand of

the employees was a flat increase of 10 per cent in pay. This was later changed to an increase of 15 per cent, a basic week of 48 hr., double time for over 52 hr., and other demands.

Motion Pictures in Shops

More than 21,000,000 ft. of motion picture film is now in the library of the Bureau of Commercial Economics, Washington. The bureau, besides exhibiting from trucks, offers use of the library free to employers who wish to introduce educational motion pictures through their welfare departments. The bureau accepts free for distribution industrial motion pictures, showing plants, processes of manufacture or production.

The following manufacturers, members of the Material Handling Machinery Manufacturers' Association, New York, have recently completed industrial films of their plants and processes of manufacture: Brown Portable Conveying Machinery Co., Chicago; Cleveland Crane & Engineering Co., Wickliffe, Ohio; Heyl & Patterson, Inc., New York; Lakewood Engineering Co., Cleveland; Mead Morrison Mfg. Co., New York; Northern Engineering Works, Detroit; Otis Elevator Co., New York; Rownson, Drew & Clydesdale, Inc., New York; Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; the Alvey-Ferguson Co., Cincinnati; Wellman-Seaver-Morgan Co., Cleveland.

Soviets Campaigning in Boston

That Boston is a hotbed for the workings of the "left wing radicals" of the Socialists, I. W. W. and Communists, is admitted by the leaders of the Socialists at their headquarters at 885 Washington Street. Unusual activity has been carried on by the local Soviets through schools, Sunday meetings, lectures and the flooding of the city with pamphlets and posters, several of the latter having been published in Boston newspapers.

The pamphlets state "The Industrial Workers of the World have as their final aim the wresting of power from the industrial lords, and the ownership and management of industries by and for the workers. We must take possession of the earth and the machinery of production and abolish the wage system."

Although the right wing Socialists controlled the recent convention at Chicago, there are several large cities where the radicals outnumber the conservatives, among which is Boston. The spreading of their doctrines is being carried on in other parts of Massachusetts as well. Employers of labor are watching these radicals closely.

The Graphophone Strike

Although the employees of the Columbia Graphophone Mfg. Co., Bridgeport, Conn., who are members of Local 116, American Federation of Labor, returned to work Sept. 2 on the company's terms, the record pressers, members of the Workers' International Industrial Union, remained on strike and picketing until Sept. 5, when they also returned. The negotiations for a location in New York, Philadelphia or Baltimore, Md., are believed to have been discontinued, although the fact that the Columbia Graphophone Mfg. Co. was intending, previous to the strike, to expend several millions of dollars in additions may have some bearing on the continuance of negotiations.

Insurance for Employees

Nearly $1,000,000 in life insurance is being taken out for its 1200 employees by the Peck, Stow & Wilcox Co., in celebration of its centennial anniversary in Southington, Conn. Announcement of this was made by President Lyman H. Treadway, following his presentation of gold and silver service medals to employees who have been with the company 25 years or more. The insurance, which is retroactive, will go into effect Oct. 1.

The plan is to provide a policy of $500 for every employee after he or she has been with the company for three months; $600 after one year's employment; $700 after two years; $800 after three years; $900 after four years; and $1,000 for every one who has been with the concern for five years or more.

With the long periods of service on the part of so many men and women in the organization, this means an average of between $700 and $800, totaling to something over $840,000.

Changes in Compensation Act

A number of important changes in the Wisconsin Workmen's compensation act made by the 1919 session of the State Legislature went into effect Sept. 1. The maximum weekly indemnity payable under the act is increased from $9.75, or on a basis of 65 per cent of a daily wage of $2.50, to $14.63, or on the basis of a daily wage of $3.75. The minimum is increased from $4.88 to $6.83. A new section provides for handling cases where permanent total disability is caused by second serious injuries. Under the old law, employers did not like to employ workmen who had lost an eye, a hand, arm or foot, because if such workman was unfortunate enough to lose the other eye, etc., permanent total disability pay would be required. The new plan requires employers to pay only the same amount of compensation for the second injury as for the first injury. In cases of permanent total disability, an additional allowance is made from a fund administered by the Industrial Commission and derived from payments of $150 made by employers in all cases of the loss or total impairment of the first hand, arm, foot, leg or eye. The change is expected to prevent discrimination against injured workmen in employment and will at the same time afford protection. The act also was amended to the effect that employers shall be liable for treatment of injured men by Christian Science practitioners unless they have previously filed an election with the Industrial Commission not to become subject to this provision.

Conference on Industrial Relations

The New Jersey State Chamber of Commerce at the Robert Treat Hotel, Newark, N. J., Sept. 17, will hold a conference on industrial relations. The discussion will be preceded by a dinner. The subjects under discussion are announced to be shop committees and industrial councils and recognition of unions. This is the fourth conference on industrial conditions held by the Chamber of Commerce within the past eight months. They are open to employers, employees and representatives of the public.

Labor Leader Fined

W. Z. Foster, secretary and treasurer of the National Committee for organizing iron and steel workers, with offices in the Magee Building, Pittsburgh, was recently fined $10 by a police magistrate of McKeesport, Pa., on a charge of violating a city ordinance. He was arrested while trying to address a crowd of steel workers, after being refused a permit to make an address in Slovak Hall. He paid his fine under protest.

In the World of Labor

Two hundred and fifty employees of the Windsor, Vt., plant of the National Acme Co. are out on strike for higher wages and shorter hours.

A temporary injunction has been issued by Judge Loring of the Supreme Court of Massachusetts restraining the officers and members of Union No. 214, National Association of Machinists, from interfering with the business of the National Equipment Co., Springfield, Mass., and from inducing the employees of that company to break their contracts of employment.

The foundry situation in Cleveland has cleared up materially owing to the resumption of operations at the plants of the Interstate Foundry Co. and the Best Foundry Co., in Bedford, in which the molders struck to enforce demands for closed shops. Gray iron foundries of Cleveland have become busier recently and are now operating at from 80 to 85 per cent of capacity. Malleable iron foundries are well filled with work, and

steel foundries are running at about 60 to 65 per cent of capacity. The supply of molders is not plentiful, and a serious shortage has developed in the supply of common labor for foundry work.

Employees of the Empire Steel & Iron Co., Dover, N. J., have agreed to a postponement of definite decision of the company to meet their request for a wage increase of 75c. a day. The men asked for the advance to become effective Sept. 1. A final conference will be held at an early date.

Two men have been found guilty of contempt of court by Justice Cropsey, Brooklyn, N. Y., Supreme Court, for violating an injunction against interference with the workmen of the American Machine & Foundry Co., Second Avenue and Fifty-sixth Street. The men, it was held, attempted to make speeches to groups of the employees.

The Northwest Steel Co., Portland, Ore., has voluntarily increased the wages of all employees at its local shipyards to 60c. per hr., with establishment of a 44-hr. week, effective Oct. 1, in accordance with announcement made by Joseph R. Bowles, president. About 12,000 men will be affected.

Employees at the repair shops of the Pennsylvania Railroad at Sunbury, Pa., have been placed on a 9-hr. day working basis, instead of 8 hr., as heretofore. Both night and day shifts will operate on this schedule. The change is due to the rush of work at the shops at the present time.

The New York State Industrial Commission has issued a report showing that the number of employees in manufacturing industries of the State was 10 per cent greater in June, 1919, than in June, 1914, with wages showing a general advance of 96 per cent.

The Warren Foundry & Machine Co., Phillipsburg, N. J., has granted the demands of blacksmiths, helpers and repairmen at the works, who recently declared a strike for 10 per cent wage increase. The blacksmiths will now receive 60c. per hr.; the repairmen, 55c., and the helpers, 45c. Molders, core-makers and helpers, also out on strike, are negotiating with the officials of the company for a settlement. These latter men have been out about six weeks.

The United Cigarette Machine Co., Lynchburg, Va., is planning for the erection of 50 new homes for workers at the plant.

The Illinois Malleable Iron Co., which was closed for several weeks on account of a strike, has resumed operations and is fast working toward normal conditions. About 80 per cent of the old men are back, and no concessions were made by the company to induce them to return. The strikes heretofore existing at the Union Special Machine Co. and the Klipfel Mfg. Co., Chicago, have also been called off and both companies are operating under almost normal conditions.

The bi-monthly examination of selected sales sheets to fix the tonnage rates paid workers in sheet and tinplate mills was scheduled to be held Sept. 10 at Youngstown, Ohio. At the July settlement the average price of Nos. 26, 27 and 28-gage black sheets was $4.35 per 100 lb., while tinplate per base box averaged $6.90. It is expected results will produce little change in the sheet mill scale, as No. 28 gage black sheets are quoted at $4.35. There may be a slight increase for tin-mill operatives.

Wilson Reynolds, general chairman of the Railroad Shop Trades at Louisville, reports that more than 4000 employees of the Louisville & Nashville shops have agreed to the 4c. per hr. increase suggested by President Wilson, and stated that the 17,000 shopmen in Louisville are voting almost solidly in favor of acceptance.

The plant of B. F. Avery & Sons, Louisville, manufacturer of plows and implements, has been down for a week as a result of the strike of 500 men, including molders, machinists, piece workers and day men, who demanded a 9-hr. day and 20 per cent increase.

ERECTING LARGE CAFETERIA

Westinghouse Co. to Have Three-story Building Seating 3000 Employees

A large cafeteria is now being erected in East Pittsburgh, Pa., by the Westinghouse Electric & Mfg. Co. to serve meals at cost to its employees. The building will be three stories high, 235 ft. long, 100 ft. deep, and will seat more than 3000 people. The equipment will cost in excess of $150,000. The building will be furnished and equipped throughout by Albert Pick & Co., and is being constructed under the supervision of B. H. Proch, engineer and architect, Pittsburgh.

On the top floor will be the kitchens and cold storage facilities and a dining room for the East Pittsburgh Club, which is composed of Westinghouse superintendents and foremen. The dining room will be equipped and operated as a regular restaurant and will have waiter service. In every other department of the building the regular cafeteria service will prevail. The remainder of the top floor will be taken up with a large shop lecture room, which will be equipped with a stage and other conveniences. Here will be given entertainments, moving picture shows, lectures and so on. It will be the headquarters for the company's educational work.

The second floor will be all cafeteria. The same thing will be on the first floor, the only difference being a section exclusively for women employees. In the basement will be a complete outfit of refrigerating machinery and equipment to circulate ice water through sanitary fillers on all floors. Here also will be the ice plant, the ice cream department and the laundry. The ice plant will have a capacity of one ton of ice per day. The ice cream will be made in brine freezers.

Some interesting ideas in the way of efficient operation have been worked out by the Westinghouse company in consultation with A. P. Jasperson, of Albert Pick & Co. At the main entrance in the center of the building there are eight cashiers. As the employees file in they purchase tickets from these cashiers. A ticket entitling an employee to a meal will cost around 30 cents, all meals costing the same amount. After getting his check the employee proceeds up a ramp or incline to the section of the cafeteria nearest him. There are no elevators in the building, with the exception of some automatic electric elevators to convey food from the kitchen. The ramps proceed upward on a 14 per cent grade and are easy to negotiate. Coming to the end of the ramp the employee deposits his ticket with another attendant and then gets his tray, napkin and table silverware. He then proceeds along to the service counter, where he can make his choice of food. There will be bread and butter, usually two kinds of meat, various vegetables, ice cream and other desserts and beverages. To save time one set of plates containing potatoes and fish and another containing potatoes and meat will be laid out on the service counter. The employee can pick up whichever he wants and then proceed along to the vegetable, dessert and beverage sections.

After eating, the employee must place his soiled dishes on the tray and carry the tray along to a belt by which the tray is conveyed to an automatic elevator and thus carried to the dishwashing room. The washing will be done by an automatic dishwashing machine. Then the employee proceeds down another ramp to the cigar case. He enters by one ramp and goes out by another. Thus the passage of employees in and out can be continuous without any interference.

This complete operation is expected to take 22 min. Thirty-two persons will pass each cashier every minute. This is a little more than an hour in which 9000 employees can be fed.

The equipment will be fully in keeping with the beauty and convenience of the building. The tables will be of sanitary steel top with fused-on enamel. The service counters will be of nickel silver. The remainder of the metal equipment will be of black polished steel. The club room tables will have Carrara glass tops. The rest room for the female workers in the cafeteria will have steel lockers, shower baths and other conveniences and comforts.

SLIDING-HEAD DROP-RAIL LATHE

Single-Spindle Machine of Wide Scope—Apron Supported on Front of Bed

A lathe designed to give extra capacity without employing more than one spindle is announced by the J. J. McCabe Lathe & Machinery Corporation, New York. Work from 24 in. to 40 in. in diameter may be machined by sliding the headstock and the tailstock from center above the forward rail to any necessary intermediate point up to as far as the centerline above the rear rail. The rails are of the usual type except that the rear or back rail is dropped 8 in. below the usual elevation in lathe construction. A maximum cross rail travel in 8¾ in. is provided.

The apron, of special rectangular box design, is hung on the forward way of the bed, and is clamped and gibbed underneath to a square bearing on the bottom of the front rail. In this way the support is normally on the front of the bed, and is not carried by the vees in the usual manner. For carrying the toolpost back to positions between the ways, the carriage is provided with a cantilever extension, mounted on the rear vee and clamped to the back of the carriage.

Complete accessibility to the apron is secured by making it a box-shaped casting braced, in which all the gears and studs are supported at each end by a double walled apron. All that is required to lay open the entire mechanism is to remove the front and then by the use of a supplemental frame all the gears in the apron may be removed without the necessity of removing the lead screw.

The ways of the bed are made of steel that is harder than the carriage, so that they will not wear hollow and for that reason, it is stated, will retain the alignment. The wear goes on the carriage and may be compensated for by gibs, which are adjustable to remove all play. Cross ribs give the base, which is of heavy construction, great rigidity under heavy cuts. Uniform alignment is secured by planning all the bearing surfaces to one setup. The large feeds are scraped and the bed is cut away at the rear to allow the tailstock to be overhung or removed quickly. The feed rack is of high-carbon steel. Scraped horizontal and vertical surfaces on the front shear give a supplemental bearing to the carriage.

The sliding selective head has 12 spindle speeds arranged in progression from 184.2 r.p.m. to 1.6 r.p.m., so as to cover all the proper cutting speeds when driving from a line shaft or a constant-speed motor. This eliminates any necessity of incurring the expense of variable speed motors. The spindle speeds are all obtained by a series of geared combinations from a constant-speed driving pulley. An index plate is mounted on the front of the lathe, graduated to show graphically the relative lever positions and the resultant spindle speeds.

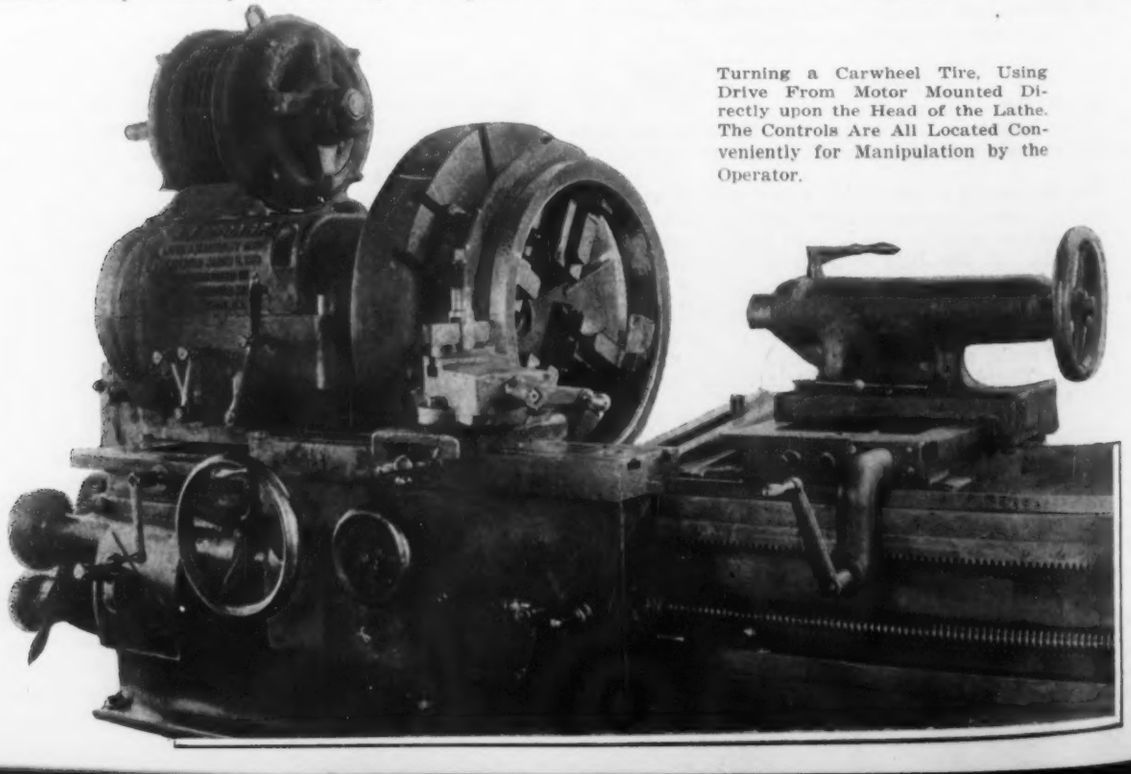
The 12 speeds arranged in progression are obtained by the use of double back gears. The back gear sleeve and pinion are cut from bar stock. The two back gears slide along the back gear shafts. The eccentricity of the back gear sleeve is obtained by boring eccentrically the bushing on which it runs. The levers for throwing in and out and shifting the back gears may be operated from the front of the lathe. A spring latch is provided for locking the face gear.

The cover contains no mechanism and is removable. It is heavily reinforced to withstand the weight of the motor, so that the motor and parts may be attached either when the lathe is ordered or after it has left the factory. Full directions are furnished with parts, so that customers can mount the motor.

The driving gears are of the friction type and are driven at 250 r.p.m. The mechanism consists of cone-driven pinions fitted with friction clutches supplemented with a positive locking device mounted on the driving shaft, the usual face gear and conveniently locked levers for engaging and disengaging the clutches. The driving gears are always in mesh and are thrown in and out of engagement in the usual manner and lock in position by spring plunger, so that when doing heavy or intermittent cutting the gears cannot crowd into engagement.

The speed-changing mechanism is contained in the lower head-stock casting. The transmission gears are of special semi-steel and mounted upon steel shafts which run in bronze bearings. The sliding gears on the initial transmission shaft are mounted on a driving sleeve. All other driving gears are pressed and keyed to their shaft or sleeve, thus no key can be twisted to bind gears or clutch nor any keys become loose and fall into gears. All gears run in the oil reservoir in the main headstock casting. Involute teeth are used to obtain a smooth tooth contact, thereby to reduce the frictional loss in transmission and lengthen the life of the gear.

The spindle, which is unusually large in diameter, is made from a 50-point carbon hammered crucible steel forging. It is finished by grinding, care being taken to finish to standard sizes. The center and the bush are also finished by grinding. The nose is left blank and extends beyond the thread forming a pilot for truing up to the face or chuck plate before the external threads of the spindle nose are engaged, thus bringing the



Turning a Carwheel Tire, Using Drive From Motor Mounted Directly upon the Head of the Lathe. The Controls Are All Located Conveniently for Manipulation by the Operator.

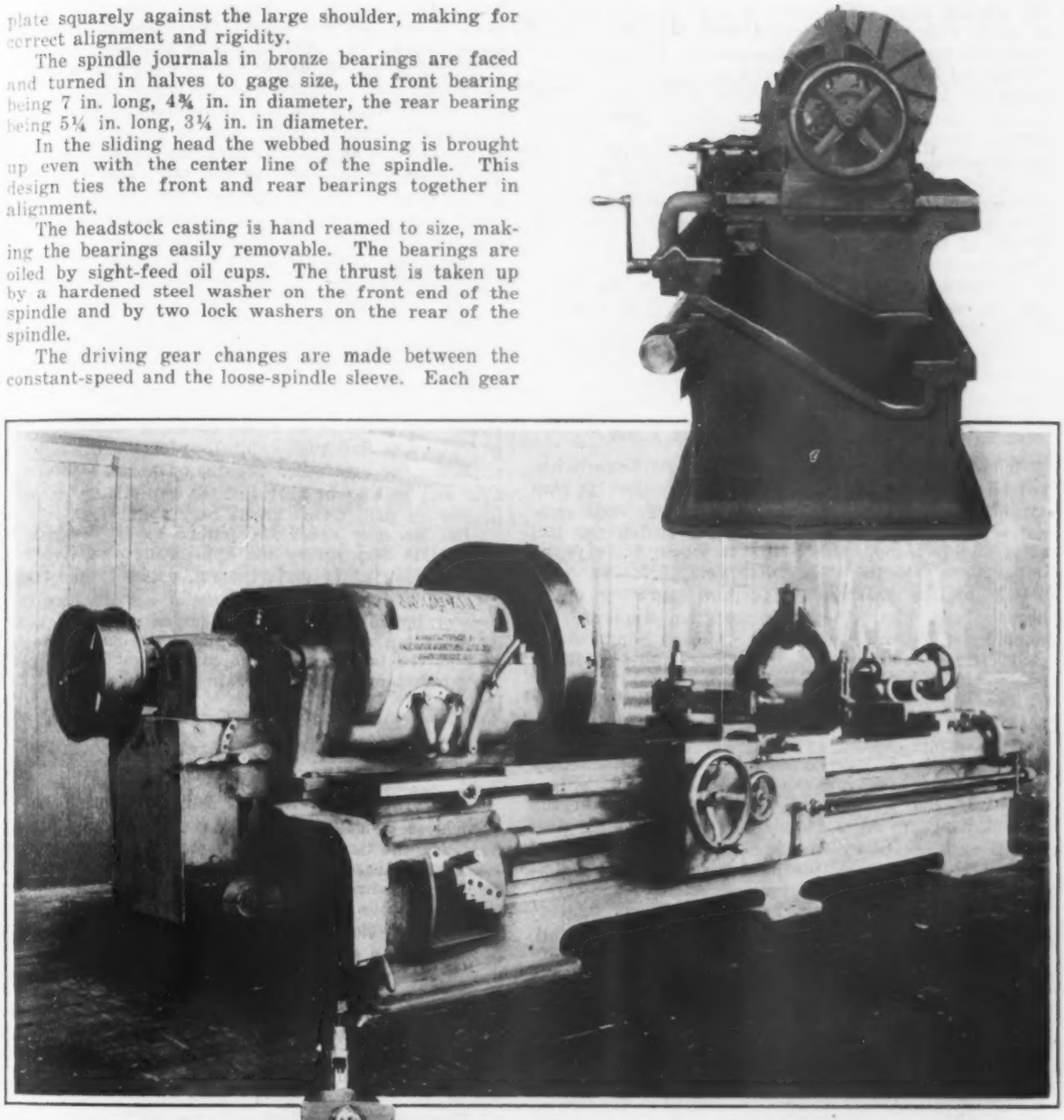
plate squarely against the large shoulder, making for correct alignment and rigidity.

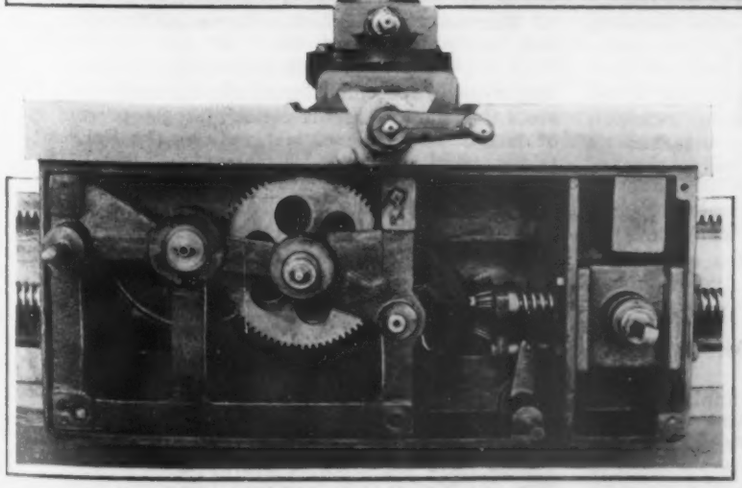
The spindle journals in bronze bearings are faced and turned in halves to gage size, the front bearing being 7 in. long, 4¾ in. in diameter, the rear bearing being 5¼ in. long, 3¼ in. in diameter.

In the sliding head the webbed housing is brought up even with the center line of the spindle. This design ties the front and rear bearings together in alignment.

The headstock casting is hand reamed to size, making the bearings easily removable. The bearings are oiled by sight-feed oil cups. The thrust is taken up by a hardened steel washer on the front end of the spindle and by two lock washers on the rear of the spindle.

The driving gear changes are made between the constant-speed and the loose-spindle sleeve. Each gear





A Single-Spindle Lathe with Lowered Back Rail and Sliding Headstock and Tailstock, which Allow of Shifting Centers Toward the Back of the Machine to Take in Work of Larger Diameter.

End View of Lathe in Upper Right Hand Corner, Showing Dropped Rear Rail and Tailstock Bearings.

The Lower View Has the Apron with Front Plate Removed, Showing Front Frame Bearing for Gears, Which May Be Removed After Lifting Frame Away, so Avoiding Necessity of Taking Out Lead Screw.

ratio is rendered effective on the sleeve by means of powerful friction clutches engaging solidly in the drum of each gear. These gears are constantly in mesh and any one of the four speeds is imparted to the spindle either direct or through the back gear.

The back gear drives are taken through a 50-point carbon hammered crucible steel jaw clutch forging, while a locking clutch connects the high-speed direct drive. These give a choice of four speeds to spindle by manipulation of two levers and the other series of speeds are brought into effect by shifting of gears on the back-gear shaft. All the gears in the most severe drive are therefore running constantly in mesh and never move laterally on the shafts. The teeth are designed to give a liberal spindle factor.

The quick-change gear mechanism is mounted in the bed under the headstock where its operating levers are convenient to the operator. The compact manner in which it is built keeps it out of the way of the operator and still permits ready access for repairs, should they ever be required. The mechanism consists essentially of a cone of gears, an intermediate shaft

and sliding gear. The tumbler gear is permanently in mesh with a pinion located upon the shaft about which the tumbler gear bracket pivots. This gear may be tumbled into engagement with any one of the seven gears which is permanently geared in the cone. This set of changes of speed may be driven through any one of three chains of gears, the setting of which is accomplished by means of a crank lever at the end of the lathe. The index plate is designed so that the operator can tell at a glance the gear setting to any thread or feed, enabling him to readily obtain the full benefit of the mechanism. The range of threads and feeds has been selected to cover the usual requirements. The construction of the mechanism permits the insertion of special change gears whenever it is required to cut special threads.

The tailstock is of massive design and has in its base a long bearing on shears. Its base is ribbed with cross strips and the jaws between the base and top are scraped. The wide tongue on the base is fitted in a groove in the tailstock top to keep the spindle in alignment with the main spindle and at the same time take up the thrust when cutting toward the tailstock. Provision is made for set-over by a cross-feed screw to secure the maximum turning clearance of the lathe. The spindle is supported at the front end, and is furnished with a large handwheel. The tailstock is provided with rack and pinion movements for moving it along the bed. The tailstock clamps are so designed as to permit setting it at the extreme end of the bed and allow it to overhang, should occasion demand. These clamps are of a new design toggle arrangement and are operated by a half-turn of the eccentric shaft to give a positive lock.

The New British Patent Law

The new patent bill in the British Parliament has passed sufficiently far in its legislative course to give some assurance that it will become a law. The compulsory working and kindred clauses stiffen the law as it stands today. One provision would prohibit the importation into the United Kingdom of the patented article by the patentee or persons operating under license from him, if such importation hindered the working of the invention in the United Kingdom.

It is provided that the monopoly rights under a patent shall be deemed to have been abused:

(a) If at any time after the expiration of four years from the date of the patent, the patented invention being one capable of being worked in the United Kingdom on a commercial scale, and no satisfactory reason can be given for the non-working.

(b) If the working of the invention within the United Kingdom on a commercial scale is being prevented or hindered by the importation from abroad of the patented article by the patentee or persons claiming under him, or by persons directly or indirectly purchasing from him, or by other persons against whom the patentee is not taking or has not taken any proceedings for infringement.

(c) If the demand for the patented article in the United Kingdom is not being met to an adequate extent and on reasonable terms.

(d) If, by reason of the refusal of the patentee to grant a license or licenses upon reasonable terms, the trade or industry of the United Kingdom or the trade of any person or class of persons trading in the United Kingdom, or the establishment of any new trade in the United Kingdom, is prejudiced, or it is the public interest that a license or licenses should be granted.

(e) If any trade or industry in the United Kingdom, or any person or class of persons engaged therein is unfairly prejudiced by the conditions attached by the patentee, whether before or after the passage of this act, to the purchase, hire or use of the patented article or the using or working of the patented process.

On being satisfied that a case of abuse of the monopoly rights under a patent has been established the comptroller may exercise any of the following powers as he may deem expedient under the circumstances:

(a) He may order the patient to be indorsed "licenses of right."

(b) He may order the grant to an applicant of a license under such terms as he may think expedient, including a term precluding the licensee from importing into the United Kingdom any goods the importation of which, if made, by persons other than the patentee or persons claiming under him, would be an infringement of the patent, and in such case the patentee and all licensees for the time being shall be deemed to have mutually concurred against the importation.

(c) If he is satisfied that the invention is not being worked on a commercial scale within the United Kingdom, and is such that it cannot be worked without the expenditure of capital for the raising of which it will be necessary to rely on the patent monopoly, he may, unless the patentee or those claiming under him will undertake to find such capital, order the grant to the applicant, or any other person, or persons jointly, if able and willing to provide such capital, an exclusive license on such terms as he may think just.

(d) He may order the patent to be revoked.

(e) He may refuse the application and dispose of any question as to costs thereon as he thinks best.

Such a law, if enacted, would act drastically to remove the idleness of useful inventions. Of course its operation would depend a great deal upon the context of the law, but undoubtedly it would strengthen the present compulsory working clause of the British law.

Meeting of Electric Furnace Association in Chicago

A meeting of the Electric Furnace Association will be held in Chicago at the Congress Hotel on Monday, Sept. 22, the day before the meeting of the American Electrochemical Society. There will be a business session in the morning, when formal reorganization, election of officers and other important business will be taken up. Following a luncheon there will be a general session in the afternoon to which are invited all who are interested in the electric furnace and its products. Several papers will probably be presented, followed by a discussion of the commercial future of the electric furnace industry.

Status of New Cars

WASHINGTON, Sept. 9.—Frank McManamy, assistant director of operations of the United States Railroad Administration, has submitted to Senator Frelinghuysen's subcommittee of the Committee on Interstate Commerce a report concerning the present status of freight cars ordered last year by the Railroad Administration. Out of 100,000 cars 68,600 have been built. Of these 51,428 are in service, and the remaining 17,172 are being stenciled at the rate of 700 per day. Of the other 31,400 contracted for 221 are being finished daily. Of the incompleted cars 10,658 are double-sheathed box cars, 12,075 are single-sheathed box cars, 3562 are 50-ton gondolas, 949 are hoppers, 1826 are low-grade gondolas and 2332 are 70-ton hoppers.

Higgins Spring & Axle Co. Will Enlarge

The Continental Axle Co., Edgerton, Wis., has purchased from the Higgins Spring & Axle Co., Racine, Wis., machinery and stock pertaining to a new department created about a year ago by the latter company for the manufacture of axles for motor truck trailers and tractors. The Higgins Spring & Axle Co. will continue to do business as heretofore, contrary to erroneous reports, and will enlarge its capacity for making springs for horse-drawn vehicles, passenger cars, motor trucks, trailers and tractors; also axles for horse-drawn vehicles. The Continental company will not make springs, but confine itself to axles.

French Steel Extras

A classification of extras covering merchant iron and steel bars, small shapes and strip steel has been issued by the Comité des Forges of France.

Rounds of 30 to 75 mm. (about 1¼ to 3 in.) are base. Larger bars up to 3½ in. and smaller down to about ⅝ in. (76 to 90 mm. and 17 to 29 mm.) take an extra of 1.5 francs per 100 kg. (about 13.5c. per 100 under normal rates of exchange).

An extra for 91 to 110 mm., or from about 3½ to 4 5/16 in. is 3 fr. (27c. per 100 lb.). Expressed in another way, the extras are increased by 1½ fr. From 75 to 90 mm. the extra is 1.5 fr.; for 76 to 110 mm., it is 3 fr.; for 111 to 145 mm., it is 4.5 fr.; for 146 to 165 mm., 6 fr.; for 166 to 190 mm., 7.5 fr., etc. Similar steps are made for smaller sizes. For example, rounds 8 to 9 mm., or 5/16 to ⅜ in., take an extra of 6 fr. per 100 kg.

Square bars 20 to 69 mm. (about ¾ to 2¾ in.) are base.

Flats 27 to 39 mm., or 1 1/16 to 1½ in. in width and 11 to 30 mm. in thickness (7/16 to 1 3/16 in.) are base. Flats 40 to 81 mm. wide and 9 to 40 mm. thick also carry the base price, as do flats 82 to 130 mm. in width and 10 to 40 mm. in thickness, and 135 to 165 mm. in width and 12 to 40 mm. in thickness.

Angles of equal size legs 60 to 100 mm. (2⅜ to 4 in.) carry the base price.

Strip steel 20 to 81 mm. (13/16 to 3 3/16 in.) in width and 3 mm. (⅛ in.) in thickness carry the base price.

American Locomotive Co.'s Report

The American Locomotive Co., in its annual report for the year ended June 30, 1919, shows profits for the year of $16,935,356.23, from which there has been deducted $4,922,789.26 reserved for income and excess profits taxes, leaving a net profit of $12,012,566.97. Deducted from the earnings, included under the head of "manufacturing expenses," were $1,155,556.49 for depreciation on all classes of property and $548,490.94 for expenditures on new drawings and patterns for the year. After payment of the usual 7 per cent dividend on the preferred stock and dividends aggregating 5 per cent on the common stock, or $1,250,000, making a total of dividends for the year of $3,000,000, there remained a surplus of $9,012,566.97, of which $5,000,000 has been reserved for additions and improvements to the plants. The amount remaining, $4,012,566.97, was added to the accumulated surplus.

Provision has been made for all income and war taxes, including an act passed by the Canadian Parliament, June 26, 1919, taxing the profits of the Montreal Locomotive Works. During the year $1,704,853.70 was expended for permanent additions and betterments to the plants, all of which was charged against the expenditures reserve.

The tonnage produced in the past year was about 23 per cent greater than in the preceding year, due in part to the increased output of the Montreal and Richmond plants following their conversion from munitions to locomotive manufacturing.

The amount of unfilled orders on June 30, 1919, was $16,034,678, compared with $74,736,543 the year previous. Since the armistice the volume of sales has been low, but all plants, except Pittsburgh, were enabled through unfilled orders to operate for the remainder of the fiscal year at a reduced rate. There has been $2,135,352 of new locomotive orders taken since July 1, 1919.

During the year the April, 1918, order for 800 standardized locomotives for the United States Railroad Administration was completed and 381 locomotives completed on another order for 500 dated Nov. 1, 1918. The contract with the United States War Department for 190 trench locomotives, amounting to $1,873,400, which was canceled, has been adjusted without loss to the company. The company subscribed for a total of $5,220,000 of Liberty bonds during the year and the Montreal company subscribed for $660,600 of the Second Canadian Victory Loan bonds.

President Andrew Fletcher says a greater volume of foreign business could be obtained but for the problems of finance and credit, many of the inquiries requiring terms of payments extending from five to ten years. He suggests a combination of railroad equipment companies and allied industries, together with banking interests, to relieve foreign countries rehabilitating their transportation systems, rather than individual action by any railroad equipment company.

Hobbs Mfg. Co.'s Plans

At a special meeting of the stockholders of the Hobbs Mfg. Co., Worcester, Mass., manufacturer of paper box machinery, vending machines, and an extensive line of lock washers, it was decided to increase the capital stock from $300,000 to $700,000; to issue $400,000 worth of preferred stock to provide additional capital for an expansion of the business. The officials of the company say that it has orders for between $150,000 and $200,000 worth of business ahead of capacity on the books at present. The company has just awarded a contract to the Central Building Co. to build an addition to the plant to be used for the hardening and tempering of steel lock washers under a new process. The lock washer department will have two floors.

The Hobbs Mfg. Co. is a subsidiary of the National Sales Machine Co., Worcester, a $1,500,000 Massachusetts corporation, which was bought by New York capitalists, headed by Charles B. Manville, Pleasantville, N. Y. Since the purchase there has been a reorganization of both corporations, resulting in Worcester men securing a controlling interest in both companies.

The new officers of the Hobbs Mfg. Co. are: President, C. B. Manville; vice-president, Herbert A. Pike; president and treasurer of the Boston Pressed Metal Co., Worcester; vice-president and treasurer, F. Stewart Andrews, Bancroft Hotel, a New York man, who is founder of the Lancaster Wire Co., England; secretary, Linwood M. Erskine, lawyer; directors, C. B. Manville, Herbert A. Pike, F. Stewart Andrews, Walter B. Clarke, vice-president of Clarke, Hanson & Co., Inc., New York; Arlington Moore, the new general manager of the company; John P. Ashey, vice-president and treasurer of the Rockwood Sprinkler Co. of Massachusetts, and William J. Denholm, formerly vice-president of the Norcross Bros. Co. Roland Libby, formerly superintendent of the Ames Plow Co., Framingham, and a foreman for the company when it was located in Worcester, is the new production manager.

Of the eleven directors of the National Sales Machine Co., six are Worcester men. The chairman is Albert E. Newton, vice-president and general manager of the Reed-Prentice Co. He is also president of the National Machine Tool Builders' Association. Mr. Newton, who will continue his position at the Reed-Prentice Co., will act in the advisory capacity for the National Sales Machine Co.

The permanent organization of the National Sales Machine Co. is as follows:

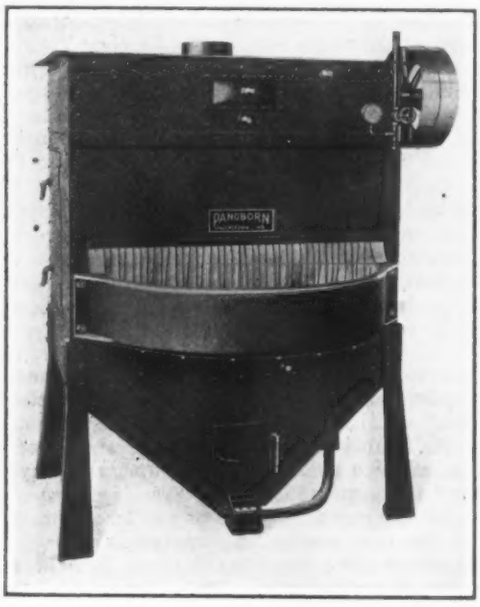
President, C. B. Manville; vice-presidents, Herbert A. Pike, Walter B. Clarke, W. J. Denholm; treasurer, F. Stewart Andrews; general manager, Arlington Moore; secretary and counsel, Linwood M. Erskine; directors, C. B. Manville, founder of H. W. Johns-Manville Co., New York; Albert E. Newton, vice-president and general manager Reed-Prentice Co., Worcester; J. P. Ashey, vice-president and treasurer Rockwood Sprinkler Co., Worcester; M. C. Nelson, general manager R. B. Phillips Mfg. Co., Worcester; Arlington Moore, general manager Hobbs Mfg. Co., Worcester; Harry E. Sherwin, general manager New Era Mfg. Co., New York; Herbert A. Pike, president Boston Pressed Metal Co., Worcester; F. Stewart Andrews, founder of Lancaster Wire Co., England; William J. Denholm, formerly vice-president Norcross Bros. Co., Worcester; Edgar W. Bright, Boston Elevated Railway Co., Boston; W. B. Clarke, vice-president Clarke, Hanson & Co., New York; executive committee, Albert E. Newton, chairman; Herbert A. Pike, J. P. Ashey, M. C. Nelson and W. B. Clarke.

Small Automatic Sand Blast

An automatic rotary table sand blast designed to meet the needs of shops producing a small volume of work and of limited size is being marketed by the Pangborn Corporation, Hagerstown, Md. The rotating table is 42 in. in diameter and is half exposed and half in a dust tight housing. Work to be cleaned is loaded, turned as required, removed and renewed while the machine is in operation. The sand blast is of the suction type, the spent abrasive falling through the grated top of the table and returning to the blasting member in a continuous cycle.

The blast projector takes air nozzles interchangeably from ⅛ in. to 5-16 in. in diameter and at 80 lb. pressure the air consumption with the smaller size nozzle is stated to be as low as 21 cu. ft. of free air per min., while 1½ hp. is required for driving the table. This is pointed out as making the machine adaptable to the smaller shop, as an auxiliary to larger equipment for special uses, or to take care of periodical peak loads.

The table top has a guard 4 in. high, which acts as a retainer for light work otherwise liable to be dislodged or blown off by the air force. A 10-in. opening for passage of the work to and from the blasting zone is provided. This opening is closed by a flexible rubber curtain, thus to retain flying abrasive and dust. The table is adaptable for use with either sand or metal



Automatic Sand Blast with Rotary Table for Small Work

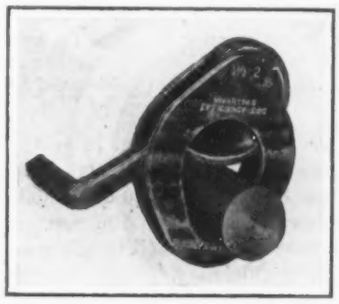
abrasive. Provision is made for connection to an exhaust system for quick removal of dust and disintegrated material. The machine requires a floor space of 4 ft. 8 in. by 4 ft. 3 in. and weighs 1750 lb.

Changes in German Machinery Works

WASHINGTON, Sept. 9.—"According to a report issued at the end of June by the Deutscher Maschinebauanstalten (Association of German Machinery Works) the composition of the working forces in the machinery industry has changed considerably since November, 1918," says a statement by the Bureau of Foreign and Domestic Commerce. "The prisoners of war have disappeared from the shops and the number of women and unskilled workers has been reduced. Highly favorable results have been achieved by the employment of specially trained operatives in the manufacture of standardized articles, and such manufacture will now be conducted on a larger scale than before the war. By the return of demobilized soldiers to the factories the number of skilled workers has been increased largely, but is not as yet by any means as large as it was before the war. As the machinery industry requires a large number of skilled workers, the increase in the number of apprentices must be considered a favorable sign. The labor supply is generally plentiful, but many factories still find it impossible to obtain numbers of capable and willing workers. In the busy railroad centers many machinists prefer to work in the railroad shops on account of the higher wages paid there. Wages have been increased several times. The amount of contract work is diminishing, particularly in the cities, owing to political agitation, which seeks to do away with contract work altogether."

Quick Adjusting Lathe Dog

A lathe dog which holds the work by the action of a cam is being manufactured by the Efficiency Device Corporation, 199 Eighth Street, Long Island City, New York. One end of the driving dog is in the form of a cam mounted between two plates. The work to be turned is passed through the opening, as shown, and is held in place by the sides of the opening and the edge of the cam. The pressure exerted by the cam on the work is regulated by the resistance which the work offers to the cutting action of the tool, that is, the greater the cutting resistance, the tighter the gripping action of the cam.



A Cam in This Lathe Dog Grips the Work with a Pressure in Proportion to the Resistance of the Work to the Cutting Tool

A feature emphasized is the rapidity in the setting up of the work, it being necessary merely to push back the cam, insert the work, and release the cam which is closed automatically by a spring. It is also pointed out that there is no set screw or other projection to catch in the operator's clothing. The dogs are drop forgings, case-hardened, and are furnished five in a set, handling stock from ½ in. to 3 in. in diameter, each size of dog having an automatic adjustment of ½ in.

Announces New 28-In. Lahte

A new cone type 28-in. engine lathe with quick change gear has been added to its line by the Cincinnati Tool & Lathe Co., 3207 North Street, Oakley, Cincinnati. This tool has the same features of design as the 16-in. and 18-in. lathes which the company has been manufacturing for the past 15 years. The lathe is made with lengths of bed of 10 to 30 ft. The distance between centers with the 10-ft. bed is 60 in. The lathe is also made with a geared head for belt or motor drive.

Permanent Holes for Screws

For the purpose of maintaining permanent screw holes in wood and other materials the Stine Screw Holes Co., Waterbury, Conn., has placed on the market the device illustrated. These screw holes are made of brass, and for wood screws or machine screws of all sizes. The screw holes are driven with a hammer, after which the head is removed. It is pointed out that the use of this device permits the standardizing to either wood or machine screws, also that the screws can be used in many places and materials where it is impracticable to use screws without them.

Permanent Holes for Wood or Machine Screws

Machinists at the plant of the Bausch & Lomb Optical Co., Rochester, N. Y., who have been out on strike with wage demand ranging from 10 to 20 per cent, returned to the plant Aug. 25, pending settlement of details of a new agreement.

BOOK REVIEWS

Concrete-Steel Construction. Part One—Buildings. By Henry T. Eddy and C. A. P. Turner. Pages, 447, xxv, 6 x 9 in.; numerous illustrations and diagrams. Published by the authors in Minneapolis, Minn.

This book is now in its second edition, rewritten to embody advanced theoretical developments. It is a treatise on the elementary principles of design and execution of reinforced concrete work in buildings. The effort of the authors is to elucidate the harmony existing between correct theory and scientific practice and discloses the error of commonly accepted methods of computation of applied bending moments by showing how unwarranted is the assumption that the statical moment about any section in a plate is all pure bending moment, instead of being a combination of applied bending and twisting moments. The authors state that their discussion of the analysis of the column and flat slab problem presented in 1914 by attacking it through analogy to a plate of some kind of homogeneous material, brought to light so many misconceptions of fundamental principles that a thorough treatment of elementary principles has been made in order that the subject matter may be more clearly and generally understood. In presenting a correct analysis of bending and twisting moments, an effort has been made to avoid higher mathematics and to simplify the subject matter so far as possible.

The underlying idea of the treatment throughout the work is that it is necessary for the reader to understand elementary principles before he becomes competent to grasp the more intricate and complex discussion of practical details. The development of these principles has been given close attention as a preliminary study for a more extended discussion of practical work and details later on.

Metal Workers Handy-Book of Receipts and Processes. Pages 582, 7½ x 4¾ in. Published by Henry Carey Baird & Co., Inc., 116 Nassau Street, New York.

A compendium of chemical formulas and description of manipulation for the working of metals and alloys. New chapters in this edition cover flame welding and cutting, thermit welding, electric welding, galvanizing, Schoop's spray process, sherardizing and die castings. The decoration and beautifying of articles manufactured from metals and also their preservation are taken up. Illustrations and tables essential to the understanding of various operations accompanying the text.

The latest data available concerning foreign reconstruction and readjustment activities has been prepared for distribution by the United States Council of National Defense. Through its reconstruction research division, the council is now transmitting this material in the form of a printed volume of 188 pages to all member organizations of the United States Chamber of Commerce and to all public libraries. The volume is indexed. A few of the headings, taken at random, include: The development of all merchant marines; conditions in New South Wales, New Zealand and the United Kingdom; trademarks, unemployment, insurance and Government allowances; the activities of the Belgian reconstruction committee in Paris; the construction of public works throughout the world; Government ownership of railroads; the situation in Denmark, and the collective buying of materials in France. The volume contains information concerning readjustment and reconstruction activities in 46 foreign countries and groups of countries, relating mainly to the governmental activities in the organization and administration of readjustment and reconstruction work. The systems of finance, banking and credit adopted in the various countries are outlined and the steps taken for the relief of food scarcity and the rehabilitation of the invaded areas are pointed out. The need for and methods used in controlling the distribution of raw materials are outlined, and the plans for the restoration of foreign trade relations and of transportation systems are discussed.

The "Official Report of the Sixth National Foreign Trade Convention," held in Chicago, April 24-26, 1919, an 8vo. volume of 650 pages, has just been published from the office of the secretary of the National Foreign Trade Council, Hanover Square, New York. The papers and discussions presented in this book are among the latest and best contributions to the literature of Foreign trade extension. America's need of foreign trade is the keynote of the opening chapter dealing with the early sessions of the convention. In later pages a good deal of attention is given to the American merchant marine. Other parts of the book deal with a variety of foreign trade subjects—education, merchandising, finance, advertising, credits, direct selling, the Webb law and ocean service. The conclusion of the convention on which stress is laid is one that has been much reiterated of late—that since the United States has become a creditor instead of a debtor, in future the course of our foreign trade will show an increasing tendency toward imports from our debtors. Another important conclusion is that to meet conditions resulting from the war and keener competition in foreign markets, American producers must bestir themselves to new activities to find outlets for their products.

An executive series bulletin on "Some Practical Aspects of Employees' Representation" has been issued by the National Safety Council, 168 North Michigan Avenue, Chicago. It emphasizes that the employer should make a definite decision before undertaking the introduction of an employees' representation plan, and should make it perfectly clear to his men just what he proposes to do. The bulletin gives a digest of five typical employees' representation plans—those instituted by the Colorado Fuel & Iron Co., the International Harvester Co., the Philadelphia Rapid Transit Co., the Bridgeport Plan of the War Labor Board (adopted in 65 munitions plants in Bridgeport, Conn.) and Wm. Demuth & Co. It contains only information, not opinions nor recommendations.

In pursuance of its educational work, the National Industrial Conference Board published a leaflet entitled "Our Country," for distribution by employers to their employees early in July. Evidence that this leaflet met a real need is afforded by the fact that within 10 days from the announcement more than 600,000 copies were purchased and distributed by employers. Many letters since received from employers have expressed the hope that similar leaflets will be published by the board for distribution at future appropriate occasions. Accordingly, the conference board has prepared a leaflet, entitled "The Birthday of Our Constitution," in order to describe the essential features of the Constitution and the benefits derived from it by every citizen in the protection of his "life, liberty and pursuit of happiness" as set forth in the Declaration of Independence.

A booklet on malleable iron and its production has been issued by the American Malleable Castings Association, 1900 Euclid Building, Cleveland, and a copy can undoubtedly be obtained by addressing the association. At recent engineering society meetings it has been emphasized how successful has been the work of the association in securing for its members a high average quality of products, partly through the research and laboratory work of the association, which has maintained a research department at Albany, N. Y.

Studies of iron depositing bacteria and their geologic relations have been made by E. C. Harder, United States Geological Survey. The results are discussed in professional paper 113, which can be obtained by a request made to the director of the United States Geological Survey, Washington.

A number of boiler makers at the plant of the Steacy Schmidt Mfg. Co., York, Pa., are out on strike. The company is planning to keep the works operating with the employment of other men.

High Exchange Rates Affect Steel Exports

Sharp Decline in Nearly All Products Compared with Last June and a Year Ago—Imports Show Upward Tendency

WASHINGTON, Sept. 9.—Exports of iron and steel in July, 1919, dropped more than 50 per cent below the figures for June, 1919, and slumped even below the July, 1918, totals.

This is an emphatic exposition of the effect which high exchange rates have had upon the American iron and steel industry. Almost every line has felt the result of the exchange rates that have added from 20 to 40 per cent to the cost of American products for export to Europe. Of course, the iron and steel industry is not the only one to be affected in this way—the entire export market has suffered under the effects of the exchange rates. While American exports rose to $918,000,000 in June, 1919, they fell to $570,000,000 in July.

Exports of Iron and Steel

Gross Tons

	July		Seven Months	
	1918	1919	1918	1919
Ferromanganese	351	555	2,886	1,697
Ferrosilicon	483	3,399	2,233	4,754
All other pig iron	19,431	38,383	113,032	209,599
Scrap	....	2,949	1,608	7,875
Bar iron	3,527	2,065	28,154	45,103
Wire rods	11,045	6,112	86,208	77,307
Steel bars	42,841	48,109	371,389	327,152
Billets, ingots, blooms, n. e. s.	139,612	21,318	1,122,051	129,263
Bolts and nuts	2,346	2,788	14,952	26,638
Hoops and bands	5,135	1,212	31,987	34,386
Horseshoes	109	341	2,172	2,141
Cut nails	195	196	2,607	2,250
Wire nails	7,688	5,202	48,443	61,124
All other nails, including tacks	1,404	497	6,387	12,102
Cast-iron pipes and fittings	7,544	3,402	43,467	23,403
Wrought iron pipes and fittings	10,167	14,206	52,307	149,774
Radiators and cast-iron house-heating boilers	227	158	1,236	1,868
Railroad spikes	702	1,698	6,022	16,909
Steel rails	27,358	32,707	239,728	413,230
Galvanized iron sheets and plates	6,423	5,949	44,566	61,465
All other iron sheets and plates	4,068	2,070	26,594	24,479
Steel plates	55,371	31,066	279,237	450,099
Steel sheets	15,175	11,616	106,736	114,840
Ship and tank plates, punched and shaped	4,467	718	20,085	6,572
Structural iron and steel	19,215	19,201	132,710	240,551
Tin and terne plates	28,812	9,713	117,466	132,244
Barb wire	27,646	7,626	109,675	51,914
All other wire	15,891	14,577	86,999	115,229
Total	457,233	287,823	3,157,937	2,743,768

The export totals of manufactures of iron and steel in July, 1919, as shown by the statistics compiled by the Bureau of Foreign and Domestic Commerce, were $60,268,065. For June, 1919, these figures were $129,985,703, while for July, 1918, they were $90,055,141. The aggregate for the seven months ended July, 1919, was $608,768,653, against $608,895,324 for the same period a year ago.

The tonnage figures of the iron and steel exports make much the same showing. In July, 1919, the items concerning which weight is reported in the customs figures, showed an export total of 287,823 gross tons, against 544,580 for June, 1919, and 457,233 for July, 1918. For the seven months ended July, 1919, the tonnage figures were 2,743,768 against an export total of 3,157,937 gross tons for the first seven months of 1918. The heaviest slump is in ingots, billets and blooms which dropped to 21,381 gross tons in July, 1919, from 139,612 in July, 1918, and 46,016 in June, 1919.

The accompanying table gives exports of all iron and steel products reported on a tonnage basis for seven months and also the exports of pig iron, semi-finished steel and ferroalloys.

Steel rails reached a tonnage of 32,707, which was an increase compared with 27,358 tons in July, 1918, but a decrease from 67,028 tons in June, 1919. The July, 1919, figures included 12,770 tons of rails sent to Japan, against 4274 in July, 1918; and 3077 tons to Cuba, against 3549 a year ago.

Steel plates fell to 31,066 tons from 76,763 in June, 1919, and 55,371 for July, 1918. The total pig iron exports of all kinds were 42,327 gross tons for July, 1919. This represents an increase, both as against the 20,265 tons for July, 1918, and the 39,758 tons for June, 1919. Of the July total, more than half went to Italy—22,691 tons. The United Kingdom received 6070 tons, and Canada, 1510. The exportation of iron ore in July, 1919, was 186,066 tons, against 206,159 in July, 1918.

Exports, 1919—January to July

Gross Tons

	Iron and steel	Pig iron	Semi-finished material	Ferroalloys
January	360,456	35,793	11,594	964
February	234,793	20,178	10,407	662
March	344,506	22,054	8,176	104
April	408,204	16,300	11,488	738
May	447,050	32,233	20,771	4,854
June	544,580	39,540	46,016	218
July	287,823	38,373	21,318	3,954
Total	2,627,412	204,471	129,770	11,494

The July exports of machinery also dropped to almost half the June figures. They were almost identical, however, with the July, 1918, figures. In July of the present year, the machinery exports were $24,004,442, against $46,419,639 for the preceding month and $24,083,300 in July, 1918. For the seven months ended July, 1919, the machinery exports aggregated $226,609,860, against $163,665,010 for the seven months ended July, 1918. Almost every line of machinery revealed serious loss.

The total of metal-working machinery of all kinds dropped to $4,440,819 in July, 1919, against $8,606,565 in the preceding month. For July, 1918, the total was $4,842,684. Exports of engines of all kinds and parts of engines totaled $5,329,360 in July, 1919, against $14,623,549 for June, 1919, and $9,291,874 for July, 1918.

The import figures revealed a decided upward tendency both as against the preceding month and against the same month last year. In June the reverse had been true. The July importations of iron and steel were 28,521 gross tons, against 21,204 in June, 1919, and 9073 in July, 1918. The biggest single item of importation was 20,393 tons of scrap. The total import of pig iron was 3949 tons in July, 1919, against 4305 for July, 1918.

Imports of Iron and Steel

Gross Tons

	July		Seven Months	
	1918	1919	1918	1919
Ferromanganese	3,952	1,081	22,426	16,393
Ferrosilicon	353	1,260	1,563	3,021
All other pig iron	....	1,608	1,953	11,594
Scrap	2,685	20,393	26,327	75,568
Bar iron	97	123	988	887
Structural iron and steel	8	124	1,627	693
Steel billets without alloys	324	25	18,057	3,944
All other steel billets	471	242	4,663	1,403
Steel rails	539	3,065	3,403	13,671
Sheets and plates	61	157	1,249	658
Tin and terne plates	....	34	32	104
Tin scrap	478	394	3,552	3,425
Wire rods	105	15	5,852	99
	9,073	28,521	91,692	131,460
Manganese, ore and oxide of	29,886	15,585	274,722	241,570

Exports of Machinery

	July		Seven Months	
	1918	1919	1918	1919
Adding machines	$108,923	$226,569	$986,880	$2,548,234
Air-compressing machinery	244,932	196,789	1,400,802	2,326,592
Brewers' machinery	12,015	17,917	83,776	136,763
Cash registers	41,857	265,489	331,733	2,084,354
Parts of	13,522	29,965	38,774	157,206
Concrete mixers	36,735	20,700	197,886	112,222
Cotton gins	5,180	14,221	74,335	247,419
Cream separators	60,775	57,882	474,746	663,997
Elevators and elevator machinery	152,888	631,559	994,103	2,076,146
Electric locomotives	3,495	2,223	66,768	210,243
Gas engines, stationary	60,542	23,439	276,160	342,697
Gasoline engines	2,349,154	1,911,664	22,071,709	20,923,261
Kerosene engines	511,823	422,266	4,660,897	5,117,792
Steam engines	1,957,587	531,973	20,271,088	17,405,996
All other engines	573,377	285,395	2,627,529	2,366,797
Boilers	976,438	476,089	2,434,568	3,362,823
Boiler tubes	478,202	386,363	3,077,126	6,051,843
All other parts of engines	2,443,256	1,289,988	13,646,088	16,767,894
Excavating machinery	83,700	21,091	825,998	586,395
Milling machinery, flour and grist	141,187	20,943	868,507	1,615,051
Laundry machinery, power	31,167	60,985	266,001	392,686
All other	20,873	28,523	145,256	245,870
Lawn mowers	21,524	20,792	123,468	316,514
Lathes	968,553	840,191	6,450,089	6,595,986
Other machine tools	815,919	1,090,382	6,475,966	7,961,533
Sharpening and grinding machines	601,592	453,545	3,878,381	3,712,687
All other metal-working machinery	2,456,620	2,056,701	14,445,495	19,485,780
Meters, gas and water	18,843	63,766	223,652	467,445
Mining machinery, oil well	155,623	299,674	1,119,024	2,100,818
All other	561,623	653,286	5,348,315	6,272,603
Paper mill machinery	169,322	160,582	979,793	2,495,143
Printing presses	112,149	208,528	706,683	1,994,229
Pumps and pumping machinery	465,378	671,047	3,518,648	5,200,913
Refrigerating and ice-making machinery	66,319	108,559	707,553	1,415,534
Road-making machinery	88,703	57,083	346,601	524,582
Sewing machines	889,936	70,859	4,300,764	7,573,603
Shoe machinery	117,353	239,249	742,319	1,557,800
Sugar-mill machinery	769,328	1,432,422	4,531,855	5,859,031
Textile machinery	691,815	1,005,320	3,807,957	8,316,907
Typesetting machines	79,780	148,097	711,714	2,729,138
Typewriting machines	641,471	1,517,358	4,218,148	10,033,059
Windmills	78,340	55,824	426,014	605,938
Wood-working machinery, sawmill	128,398	61,121	572,870	882,378
All other	69,534	153,826	557,542	1,353,444
All other machinery and parts of	3,807,761	5,076,229	23,651,429	43,412,514
Total	$24,083,300	$24,004,442	$163,665,010	$226,609,860

Besides the tonnage figures there was importation of $271,662 in machinery for July, 1919, against $272,029 for July, 1918. For the seven months ended July, 1919, these machinery imports aggregated $2,211,491, while for the same period of the preceding year they were $2,241,153. The total importations of iron and steel aggregated $1,837,907 for July, 1919, against $1,898,946 for July, 1918. For the seven months period they were $13,410,221 in 1919 and $14,111,198 in 1918.

The importation of manganese ore and manganese oxide dropped to 15,585 tons in July, 1919. For June, 1919, the quantity was 31,550 tons, and for July, 1918, it was 29,886 tons.

Keeping a Check on Factory Scrap

Costly delays, overtime work, explanations and other items aside from the direct losses of materials and labor, according to an article in *100%* by George W. Veale, director department of standards, Timken-Detroit Axle Co., Detroit, make an exact estimate of losses resulting in scrap instead of product a matter of considerable difficulty. His analysis of the problem is as follows:

From the point of management, any figures that reflect a condition, and are accumulated according to standard practice, so that they indicate improvement or retroactive conditions, will answer the manager's needs.

I have found that if the scrap tickets are priced by the cost departments so that they cover the material value plus the direct labor charges up to the point where the parts become scrap, the cost thus indicated is great enough and immediate enough to attract attention to the waste going on.

It is not necessary to include the overhead percentages and other cost items, for the figure has only a relative value and is only used as a barometer of conditions.

To be of any value the scrap report must be gotten up in such a way that it will locate the offending departments and individuals. Thus it becomes necessary to accumulate the scrap tickets by departments and responsibilities.

This can be done very readily by the use of the sorting and tabulating machines where such are in use.

The original scrap tickets should be kept on file long enough to give each foreman a chance to investigate his scrap charges, and learn which individual operators are responsible for them. Thus he may counsel with them and devise means for eliminating or reducing the causes of abnormal scrap.

Experience shows that it pays to set up a standard for each department, indicating what amount of scrap is considered normal, or rather, reasonable. If this is done you can measure each foreman's efficiency on scrap by dividing the standard allowance by the actual figures.

It is not advisable to set up a standard in terms of dollars and cents only, for the reason that the money alone does not represent the true proportion of gain or loss; also because one man may be working on material of much greater value than another, and again, one department may have many more operations to perform on the same piece than another, and thus the danger of making scrap is enhanced.

But it is well to make comparisons and figure efficiencies of scrap. I have decided that comparing the cost of scrap to the productive payroll in terms of percentage gives a very fair and comprehensive figure.

Except in very rare cases I find that 2 per cent of productive payroll gives a maximum scrap allowance, and in some departments I would allow but ½ of 1 per cent and even less at times. That means that the foreman is considered 100 per cent efficient on scrap if he holds his scrap down to 2 per cent or less of the amount of his productive payroll.

When computing the standing of the shop as a whole for scrap I always like to compare it to the gross sales and thus obtain a percentage as shown above.

Scrap reports must be issued promptly, must be accurate and reflect true conditions, and must be carried in such a manner as to permit a comparison by the officials of one month's performance with all others. This may be done graphically, or by setting the figures down underneath one another, with equally good results, according to the fancy of men who are managing.

Remember, reports are for men who manage and for them alone.

ESTABLISHED 1855

THE IRON AGE

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The Shop Committee Movement

The theory and practice of the closed shop were never more unacceptable than at the present time, for the solution of problems relating to labor and the cost of living is dependent largely upon the increase of production and that can not be effected if non-union men are excluded from shops in which union members are employed. The maintenance of the open shop to at least the extent that it now prevails will be insisted upon by manufacturers and if the conference to be held in Washington by request of the President takes a position opposed to theirs on this fundamental principle of allowing men freedom to work, it will fail to accomplish anything of value.

The continuance of the open shop does not, however, mean that there shall not be collective bargaining in the proper meaning of those words or that the various forms of representative shop government shall be abandoned. On the contrary, it is probable that the conference, if wise in its leadership, will encourage the shop committee movement, which is a highly important expression of recent tendencies to establish closer relations between capital and labor. This movement has appeared in numerous plants and a valuable pamphlet recently published by the Bureau of Industrial Research gives a digest of twenty plans for employees' representation through joint committees introduced by American companies. As this pamphlet says, "the company shop committee movement in its present specifically American manifestation is less than a year old. It is still unproved and tentative. Its relation to the spontaneously democratic activities of organized labor is still unsettled."

The plans differ in many details and it is well that the similarities and differences are so clearly shown in the pamphlet, for it gives others who are preparing to join the movement an opportunity to select what seem to them to be the best features of the existing plans; but it is evident that through all the efforts run the same exalted purpose—to find something to take the place of the close personal relation that existed when factories were small and to promote justice in industrial relations.

It would be ridiculous to suppose that the manufacturers of this country would hand over the control of their shops to their employees, for the supreme authority must remain with the employer, who must be prepared to stand losses as well as share in profits; but without surrendering any final authority, many employers are obtaining encouraging results by freely consulting with their men. In the much discussed experiment at Rock Island arsenal, which was explained in THE IRON AGE last week, Secretary Baker has issued a statement in which he says that while the War Department has encouraged the formation of committees in its arsenals, which committees consult freely with the men and act in an advisory capacity to the management on questions of shop conditions, production and wages, with the result that hearty co-operation has been obtained, the management is wholly undisturbed and the commanding officer has as much authority as he ever did. If this is true, the experience at Rock Island adds new evidence to that which has been furnished by other shops that employers can consult their men and their advice without surrendering a particle of authority. If the men feel certain that the employer has a genuine interest in them, they will be more contented than if they have minority representation and some apparent authority on a board of directors who have no real interest in their welfare.

Export Indifference

History is repeating itself in the American steel export trade. Mills desirous some months ago of selling abroad a part of their output have now retired from the export market. It is probable this is a temporary attitude taken in the face of strong domestic demands and curtailed production. A similar relaxation of effort for foreign business is not likely to happen in the case of the two strong American exporting institutions having direct mill connections—the export sub-

sidiary of the United States Steel Corporation and the Consolidated Steel Corporation. It is only exporters who have been depending on selling for mills not identified with either of these two exporting agencies that have lately had difficulty in getting material. In this respect we learn how lightly is exporting regarded by some of our manufacturers.

The discouragements in trying to effect export sales have been numerous. In spite of the fact brought out from time to time in these pages practically ever since the signing of the armistice, that the volume of exports would not measure up to general expectations, there has been a hope that a tonnage business would somehow come to the United States for rehabilitation and reconstruction work in Europe. The intervening period has helped to bring home the wide differences between domestic and foreign business transactions; and the obstacles of credit arrangements and the decreasing exchange rates, which make it so costly for the foreigner to buy American goods, have been factors in chilling enthusiasm. The real concern rests with those export houses which have made a special study of exporting and feel qualified to relieve manufacturers of details yet generally unknown by them. If indifference should develop among manufacturers in many other lines, it is clear that many of these export commission establishments will have to close doors.

Whether the individual mill is pursuing a wise policy in not setting aside a definite percentage of its output to be distributed on export account must be answered by the management of that mill. What exporting we shall continue to do in iron and steel products will probably total a large enough volume to keep the country as a whole in touch with the world and pave the way for an expansion, should it develop. The world's manufacturing capacity, while large, would be inadequate were there to be a world-wide development, starting, say, with the expansion of railroad lines in regions where there are now large populations. It is believable that the industrial history of the world will duplicate that of the United States after the Civil War. There are wide areas in the temperate zones well peopled but lacking in transportation facilities, which in turn beget factories and an increased demand for the things of civilization. There are unmeasured expanses of the tropics which need only the hand of man to make them of more use. Though much must transpire in the recovery from the world war before we shall enter on this new era, the future holds big promise for our own industries if we keep prepared. Expansion possibilities in our own country are no mean matter, but if we do not feel justified in maintaining active export connections at the moment, it should be somebody's duty in a given industrial enterprise to watch continually so that he is informed of conditions and is able to take a part at the very outset of a better world demand.

The fact remains that our best means of being ready for the opportunity is to be engaged, at least to some extent, in business relations with the rest of the world. It is only in this way that each can do his part toward seeing that American-made goods have some chance in foreign markets.

Much of this effort is being made in financial circles through the foreign bank branches which have been established. It will take some time to insure that we have proper consideration in the matter of transportation and means of communication and in facilities of distribution in foreign ports. It is not reasonable to expect that long entrenched cable, lightering and warehouse companies in foreign ports will give up their well-earned advantages without a contest. We have far to go before our export trade may be said to have a really firm foundation and the fact needs reiteration in legislative, financial, commercial and manufacturing circles.

Wholesome Advice by Judge Gary

For many years labor leaders have cried out violently against "government by injunction," but that is a process of controlling "the trusts" that Judge Gary suggested in his address at Boston September 4 before the American Bar Association. Remarking first that he was "talking to men more competent" than he to answer the great question as to what shall be done with large aggregations of capital, he suggested that the principle of injunction had previously been applied in some cases to prevent large corporations from doing things inimical to the public good, and suggested: "Why not have law so framed and administered as to allow the courts to cover the whole subject by injunction, rather than by the destruction of property or business?" Referring, though in different words, to the practical suspension of the Sherman law during the war, Judge Gary pointed out that if such procedure was appropriate and necessary during the war, the same is true in times of peace, only perhaps less urgently, for in each case the object to be attained is the same—the largest production.

There is one paragraph in Judge Gary's address that ought to receive particularly wide attention, for its application embraces everyone. He referred to the fact that the war has "abnormalized the minds of men throughout the earth." There is nothing more true or important to-day. Various results have followed, one being the development of "selfishness, cupidity and hate," and growing out of that the desire to obtain something for nothing. Judge Gary rightly says of this:

"The idea is not confined to any individual, community, class or race, though it may be exaggerated more in some than in others." It is this abnormal condition of the minds of men everywhere, with various results, that is responsible for a great deal of the trouble the world is now passing through, and to recognize the fact is to take the first step toward correcting the condition produced.

Judge Gary approves the work of the peace council at Paris and expresses the opinion that "the major part of the people" of the United States "believe that, under the most difficult and complicated circumstances, the President, as their

properly constituted leader and representative, secured the best terms and conditions practicable and that the same should be approved."

As to trade with the Central Powers, Judge Gary believes it should be resumed, for our good and that they may be enabled to pay in reparation. They "have disregarded the laws of God and man and should make restitution and suffer penalties, and this has been provided for." Resumption of commercial relations does not require that we forget or forgive.

It will be recalled how much protest was provoked in some quarters against Judge Gary's suggestion some time ago that we might secure needed labor by permitting Asiatic immigration. Judge Gary reverts to that subject and proposes something quite definite as a means of suitably carrying out the suggestion. He observes that it is possible that if comparisons were made "as to intelligence and general merit," the advantage might be on the side of those who are denied the immigration privilege over some to whom it has been accorded. The immigration would be to the advantage of the United States in respect to the largest production and greatest development of enterprise being attained. If, however, the objection is that unrestricted immigration might result in the settlement here of "an overwhelming multitude of certain foreigners," then the thing to do would be to make a reasonable restriction as to numbers, determined by laws that would be applicable to all nationalities. There could then be no charge of discrimination. Judge Gary's suggestion is not a scheme to get around an awkward situation and save our faces. It is a plain fact that we really do not want too much of any one race. If this country is to be a melting pot, the pot has got to do some melting. Of the best race whose members have ever come to this country we do not want too many as a whole or too many segregated in one locality. The thing may seem harmless enough with the people of some nationalities, but it is not good.

Saving Daylight Saving

The National Daylight Saving Association has begun an active campaign to continue the extra hour of sunlight in the warmer months, and excepting in rare instances is securing the enthusiastic co-operation of manufacturers, and the employees, too, outside of the farming districts. The association is making its beginning in the cities and larger towns, which it is urging to adopt a standard local ordinance, the draft of which it furnishes, which would change the clock an hour in spring and autumn, but the plan is for a five months period instead of the present seven months, the first and last month of which are held as useless for this purpose.

The plan is to establish the system in the larger centers of population, in the belief that from there it will spread naturally and automatically into the rural communities, until State legislation will be the logical consequence. The hope is that before next spring the entire Eastern time zone and some other sections of the country will have adopted the plan, which would mean that train time could be also changed without confusion, for if one time zone were changed and that next to it were not, instead of jumping the schedule backward or forward one hour, it would be two hours. Certain it is that wherever the suggestion has been made, the people, employers and employees alike, welcome it. They dislike to think of a summer with the short evenings that used to be, and the loss it would mean to them in the recreation of sports and profitable labor in the gardens.

If this plan should fail of success, then the more distinctly local effort will be made to secure a continuance of the system. As this has been thought out, it takes two forms, the one to keep the clock as it is in the winter, but to set back the time of opening shops, stores, churches, schools, moving picture houses, theaters, everything possible in social and business life, so that everyone would get up an hour earlier by the clock and go to bed an hour earlier by the clock, the theory being that the retiring time is largely governed by the closing hours of entertainments and duties, so that the system would go into effect with no greater disturbance of existence than when the clock itself is changed. The objection raised to this plan is that people do not like to get up so early, even though they retire early. Though the time by the sun would be exactly as it is under national daylight saving, the psychological effect of getting up at an earlier time of the clock is to be reckoned with.

The other plan is to change the clocks for local purposes, which would make two times, clock time and sun time, as was done in Detroit and some other centers in the Middle West several years ago. Here again objection is raised; occasionally people did not know whether an hour named was clock time or sun time and complications followed.

However, the objections to either system are considered by most people of the cities as unimportant when compared with the extra hour of daylight. The shrinking at the thought of early rising hours in the one case and the possible confusion named in the second case do not seem to them as dangerous bugaboos when considered with the alternative of short evenings. There is no doubt that daylight saving produced a really important economic gain; to revert to the old way would mean an economic loss. And this is apart from the matter of pleasure. Men and women worked the better and more happily because of better health and better spirits.

The German Manganese Problem

Interesting information is filtering out of Germany as to the solution of the manganese problem there during the war. The outside world knew that supplies of manganese were not adequate for a long war and conjecture has been keen as to what was the recourse. It is now admitted by German authorities that the ferromanganese problem has become a difficult one.

Long before the war started the opinion was claimed to be general in Germany that the use of solid ferromanganese as a reducing agent in making steel was uneconomical and technically faulty. It was the general practice to melt the

alloy in electric furnaces and add it in liquid form; this, it is reported, resulted in a saving of 30 per cent of manganese and in other advantages. British testimony on other pages of this issue is also to the effect that when solid ferromanganese is added to molten steel in the ladle, it is only partially absorbed and at least 30 per cent of the manganese content is lost by oxidation. The portions of manganese thus likely to remain unabsorbed in the steel may form manganese ghost lines in working and also result in hard spots. This authority states that ferromanganese can be melted in small electric furnace, specially designed, so that the loss is not more than 5 per cent.

The practice of pre-melting ferromanganese is now said to have been of great assistance in Germany in eking out the supplies of manganese. At last, however, when these began to fail and spiegeleisen could not be used, reduction of the steel is said to have been carried out with calcium carbide which at first was added solid to the ladle but later in the liquid state. By securing ash-free coke and other forms of carbon, the need of deoxidizers was less felt. Just what the results were, it is not stated. The use of calcium carbide in American practice has been more than experimental. It is interesting to surmise, however, that this may have been one cause in the rapid expansion in electric steel output. In 1918 the German production of electric furnaces was over 221,000 tons, whereas in 1914 it was only 89,000 tons and in 1908 but 19,500 tons.

In the United States there has never been an extended use of pre-melted ferromanganese in steel making. In view of the evidence of the war experience in Germany and the British net saving of 25 per cent as between the solid and liquid additions, to say nothing of a probably better steel, it would seem that its more general use in American practice would be justified. It may become advisable where special emphasis is laid on quality of the product.

CORRESPONDENCE

British Machine Tool Manufacturing

To the Editor IRON AGE:

Dear Sir: In the Aug. 28 issue of THE IRON AGE the report by Alexander Luchars on British machine tools and industries is highly interesting.

On page 574, speaking about the Associated British Machine Tool Makers, Ltd., Mr. Luchars says that each of the 11 concerns that have combined in this association *now* concentrates on a limited number of types of machinery so that large lots of similar machines are turned out on a repetition basis.

Permit me to say that all the 11 firms which Mr. Luchars enumerates have been concentrating on the same kind of work a long time prior to the war, and each of them then manufactured just the same type of machines which Mr. Luchars mentions in his report.

R. POLIAKOFF.

New York.

At Youngstown, Ohio, 100 union sheet metal workers declined to work Sept. 8 when employers refused their demand for wage increase from 80 to 90c. per hr. The employers agreed to compromise on a 5c. advance.

CONTENTS

Selling Homes to Workmen at Cost 695
Tar and Molten Spiegel in Open-Hearth Practice 697
American Producers Make Further Statements on Dumping of Ferromanganese 698
Unusual Explosions of Steel Cylinders Holding Compressed Gases 698
New Coke Plant of La Belle Iron Works 699
Industry's Ruin Shown by Decreased Production of German Plants 701
Air Operated Pickling Machine 702
Mineral Production Last Year 702
British Practice in High-Speed Steel 703
Pulverized Coal in Boiler and Furnace 709
Danger of Rainbow Chasing and Agitation—Perils of Prosperity and Unsound Economic Ideas 711
Program for the Philadelphia Meeting of the American Foundrymen's Association 712
Judge Gary's Views on Labor, League of Nations and Trade with Germany 713
Wartime Activity in the Valleys 713
Schools May Buy Machine Tools 714
Large Willys Corporation Organized 714
Exports and the Metric System 715
New Tube Sales Company 715
Pittsburgh Chamber of Commerce Defends the Pittsburgh Basing Point 716
Development of the American Merchant Marine 716
Labor Situation:
Controversy as to Arsenal Management—Opponents of Strikes Dismissed—Worcester, Mass., Strikes—Motion Pictures in Shops—Soviets Campaigning in Boston—The Graphophone Strike—International Trade Conference—Changes in Compensation Act—Conference on Industrial Relations—Labor Leader Fined—In the World of Labor 717-18
Erecting Large Cafeteria 719
Sliding-Head Drop-Rail Lathe 720
The New British Patent Law 722
Meeting of Electric Furnace Association in Chicago 722
Status of New Cars 722
Higgins Spring & Axle Co. Will Enlarge 722
French Steel Extras 723
American Locomotive Co.'s Report 723
Hobbs Mfg. Co.'s Plans 723
Small Automatic Sand Blast 724
Changes in German Machinery Works 724
Quick Adjusting Lathe Dog 724
Announces New 28-Inch Lathe 724
Permanent Holes for Screws 724
Book Reviews 725
High Exchange Rates Affect Steel Exports 726
Keeping a Check on Factory Scrap 727
Editorial:
The Shop Committee Movement—Export Indifference—Wholesome Advice by Judge Gary—Saving Daylight Saving—The German Manganese Problem 728-30
Corporation Favors Pittsburgh Base 732
New Jones & Laughlin Furnace Started 733
Federal Trade Commission Asks More Power 734
Steel Corporation Orders Increase Again 734
Swiss Industrial Mission Here 734
Labor Leaders Hesitate to Declare Strike 735
Iron and Steel Markets 736
Steel Ingot Output Still Increasing 739
Will Build New Open-Hearth Plant 739
Export Trade:
Legislation for Financing Exports—Needs and Conditions in Italy—Urges Care in Export Shipping Terms—British Out After Italian Trade—Material-Handling Machinery for South America—Resumption with Hungary 744-45
British Iron and Steel Market 746
Iron and Industrial Stocks 746
Governing Sale of Shell Steel 747
Non-Ferrous Metals 748
Prices of Finished Iron and Steel, f.o.b. Pittsburgh 749
Personal 750
Obituary 751
Short Trade Items 751
Opinions Clash at Conference 752
Switzerland and German Goods 752
Conspiracy to Defraud Railroad Administration Charged 752
Export Traffic Rates 752
Machinery Markets and News of the Works 753
Office Changes 761

Convention of Associated Business Papers

The fourth annual convention of the Associated Business Papers, Inc., will be held at Congress Hotel, Chicago, Sept. 18, 19 and 20. At the opening session, Thursday morning, Sept. 18, the president, A. C. Pearson, of the *Dry Goods Economist*, New York, will deliver his annual address and a number of papers will be read.

Thursday afternoon will be devoted to an editorial session and papers will be read on labor problems and other subjects. Friday morning there will be an advertising session. The first half of Friday afternoon will be a circulation session and the second half will be devoted to publishers and business. The annual banquet will be held at the Congress Hotel, Friday night.

Corporation Favors Pittsburgh Base

Says Change Would Violate All Economic Laws

Answer Admits that Primacy May Some Day Pass from Pittsburgh to Chicago, But Declares Chicago Now Manufactures Only Half It Consumes—Denies Jurisdiction of Federal Trade Commission to Fix Prices

The answer of the United States Steel Corporation, Carnegie Steel Co., Illinois Steel Co. and Minnesota Steel Co. in the matter of the application of the Western Association of Rolled Steel Consumers for a complaint against the United States Steel Corporation and others has been filed before the Federal Trade Commission at Washington. The one document is the answer of all these companies and is as follows:

Corporation Not a Manufacturer

"The United States Steel Corporation, Carnegie Steel Co., Illinois Steel Co. and Minnesota Steel Co., appearing by leave of the Federal Trade Commission, and responding to the application of the Western Association of Rolled Steel Consumers for a complaint against them and others, say:

"1. Respondent, United States Steel Corporation, is not now and never has been engaged in the production or sale of rolled iron and steel at Gary in the State of Indiana, or South Chicago or Joliet in the State of Illinois, or Milwaukee in the State of Wisconsin, or Duluth in the State of Minnesota, or Pittsburgh in the State of Pennsylvania, or elsewhere, as stated in said application. United States Steel Corporation owns substantially all the stock of the Carnegie Steel Co., which produces and sells rolled iron and steel and other iron and steel products at Pittsburgh; substantially all the stock of the Illinois Steel Co., which produces and sells rolled iron and steel and other iron and steel products at Joliet, South Chicago, Gary and Milwaukee, and substantially all the stock of the Federal Steel Co. whose subsidiary, the Minnesota Steel Co., manufactures and sells rolled iron and steel and other iron and steel products at Duluth. United States Steel Corporation sustains no relation to any of said companies except as stockholder as aforesaid, although it does from time to time make recommendations to said manufacturing companies with respect to the conduct of their several businesses and exercises such control over them as is incident to such stock ownership.

Dependent upon Pittsburgh

"2. Respondents, Illinois Steel Co. and Minnesota Steel Co., generally sell their products of iron and steel at the prices charged for similar products in the Pittsburgh district for delivery at the Pittsburgh mills, plus an amount equal to the freight on such products from Pittsburgh to the point of destination. This is the practice of steel manufacturers generally. The prices so charged are not arbitrary nor are they the result of any agreement or understanding between producers. On the contrary, they are fixed and controlled by the law of supply and demand and are the market prices prevailing in the territory served at the time of service. Said practice had its inception at the beginning of the steel industry in this country. At that time nearly all the iron and steel produced in the United States was manufactured in the Pittsburgh district and the Pittsburgh mills controlled the price as a matter of course. Since that time many mills have been established in different parts of the country outside of the Pittsburgh district, largely in what is known as the Chicago district. Such mills, however, have never been able to supply the requirements of the territory tributary thereto, the major part thereof having always been supplied by the Pittsburgh mills. As a consequence, consumers within such territory have been obliged to depend upon the manufacturers in the Pittsburgh district for the larger part of their supplies, and for this reason the practice of selling at the prices charged by the Pittsburgh manufacturers plus freight from Pittsburgh has been continued down to the present time.

Pittsburgh Base Not Always Adhered to

"3. The practice of selling at the Pittsburgh base price plus freight has not, however, been adhered to at all times or under all circumstances. When the demand has equaled or exceeded the supply, it has generally been followed, but when the demand has lessened and the supply has materially exceeded the demand, and particularly when the production in the districts outside of Pittsburgh has equaled or exceeded the requirements of such districts, little attention has been paid to the Pittsburgh price, and the freight charged from Pittsburgh has either been omitted altogether or greatly reduced—following again the law of supply and demand in the territory served.

"4. The practice above described long since became and still remains a settled custom in the trade. The business of producers and consumers has been arranged, manufacturing and fabricating plants have been located, and vast investments of capital have been made in reliance upon it. To change such practice by order of the Commission or in any other way than by the ordinary processes of trade would create great confusion in the industry and cause incalculable loss to a large number of concerns engaged in the business, and, respondents submit, should not be attempted.

Right to Fix Prices Denied

"5. Respondents further submit that the determination as to whether Chicago shall be a basing point in fixing the manufacturers' price for iron and steel would necessarily involve the determination of the price at which such manufacturers shall sell their products, and that such determination is beyond the powers conferred upon the Federal Trade Commission by law. To merely order that the Chicago manufacturers shall sell such materials as they manufacture at a Chicago base price without fixing such price would but require a change in the name by which the transaction is described without affecting in any way the substance thereof.

Primacy May Pass to Chicago

"6. Respondents further submit that Chicago could not properly be made a basing point for the sale of iron and steel under present conditions. Pittsburgh is and will continue to be the basing

point for such products in the sense that it controls and will continue to control the price of iron and steel throughout the country so long as the country is dependent upon it for a substantial portion of its supply. It may be, as claimed in said application, that the greatest normal growth and increase in iron and steel production under peace conditions will naturally and normally be in and about Chicago, and it may be that at some future time the Chicago district will lead in the production of iron and steel in this country. When that time arrives, if it ever does arrive, the primacy will pass to Chicago, and it will become the basing point without the order of any legislature or commission, and without the power of any person to prevent it. Until that time and so long as Chicago is only able to manufacture less than half of what it consumes, it is idle, respondents submit, and contrary to all economic laws to insist that it shall be made a basing point. Chicago producers cannot be expected, nor should they be required, to sell their products in any locality at less than the market price prevailing in such locality or at a substantially less price than their customers in such locality are obliged to pay to other producers for the major part of their requirements.

Denies Discrimination

"7. Respondent, United States Steel Corporation, denies that it discriminates between the purchasers of iron and steel in the Pittsburgh and Chicago districts within the meaning of Section 2 of the Clayton act. Assuming (although such is not the fact) that it sells in the Pittsburgh district what is there sold by the Carnegie Steel Co., and in the Chicago district what is there sold by the Illinois Steel Co., it says that such sales are made in each district to purchasers of the same class at the same price and are made in each district at the market prices there prevailing. Iron and steel are sold generally to the manufacturers of agricultural implements, and steel rails and accessories are sold to the railroads, on a different basis and, in the case of some articles, at a lower price than to other consumers. The users of such steel, however, are not in competition with any other class of users and the practice neither lessens competition nor tends to create a monopoly in any line of commerce.

Not Unfair Trading

"8. Respondents deny that the charging of a greater price for steel products in the Chicago district than is charged for like products in the Pittsburgh district under the circumstances above set forth amounts to unfair trading within the meaning of the fifth section of the Federal Trade Commission act. The unfair trading prohibited in that section is such as tends to the injury of competitors, not customers, and it is not suggested that the practice complained of is of that character. Moreover, such practice operates to the benefit of the consumers of steel without regard to their location, as it gives them the benefit of the competition of the manufacturers of the whole country, whereas if the course insisted upon by the applicants should be adopted, competition between localities would to a large extent, if not altogether, be destroyed. Nor is the claim that the Chicago fabricators are prevented by the practice in question from competing with the Pittsburgh fabricators in the latter's territory a substantial one. The fabricating business is essentially local in character on account of the high freight rates on fabricated material because of its bulk. The Chicago fabricators, therefore, could not successfully compete with the Pittsburgh fabricators in the latter's territory, even if the cost of rolled steel was the same in each locality.

Deny Jurisdiction

"9. While respondents concede the jurisdiction of the Commission to determine any question of discrimination arising under the second section of the Clayton act, and any question of unfair methods of competition arising under the fifth section of the Federal Trade Commission act, they deny the jurisdiction of the Commission to fix the prices at which steel products shall be sold, or to determine whether Pittsburgh, Chicago or any other point shall be a basing point upon which such prices shall be made. As to the allegations of discrimination and unfair methods of competition, respondents submit that the practices hereinbefore described do not involve either, and do not tend to substantially lessen competition or to create a monopoly in any line of commerce.

"10. Respondents respectfully submit that the application for a complaint should be denied."

The answer is signed by the United States Steel Corporation, Elbert H. Gary, chairman; Carnegie Steel Co., H. D. Williams, president; Illinois Steel Co., E. J. Buffington, president; Minnesota Steel Co., Elbert H. Gary, president; William W. Corlett, attorney for respondents, 71 Broadway, New York, and R. V. Lindabury, of counsel.

Contracts Awarded by Weirton Steel Co.

The Weirton Steel Co., Weirton, West Va., has placed a contract for a 1300-ton metal mixer with the Pennsylvania Engineering Works, New Castle, Pa., two 80-ton locomotives with the American Locomotive Co., also a contract for complete coal-handling equipment for the new open-hearth steel plant with the C. O. Bartlett & Snow Co., Cleveland. Under date of Sept. 8, the company is asking for proposals for the erection of seven 100-ton open-hearth furnaces to be built at Weirton. Contracts for the equipment for these furnaces were placed some time ago. The new blast furnace of this company, put in operation several months ago, is making from 525 to 550 tons of basic iron per day, and it is expected will soon be making about 600 tons per day. This is a very modern stack, having all the latest appliances, and was built complete by Freyn, Brassert & Co., engineers, Peoples Gas Building, Chicago.

New Jones & Laughlin Furnace Started

The Jones & Laughlin Steel Co., Pittsburgh, put in operation on Monday, Sept. 8, a fifth blast furnace at Aliquippa, Pa. This furnace, which has just been completed, is of the same type as the other four Aliquippa stacks. It will have a daily capacity of 550 tons of pig iron, all of which will be used in the open-hearth steel plants of the company. The Jones & Laughlin Steel Co. now has a total of 12 blast furnaces —five at Aliquippa, and six Eliza and one Soho at Pittsburgh. Their combined daily capacity is about 7000 tons of pig iron, making this company the second largest individual producer of pig iron in the country. For some time the concern has been short of metal for its steel works at Aliquippa and the new furnace will take care of this shortage and also give some iron to the South Side, Pittsburgh, open-hearth works, where it is also needed.

The American Association of Engineers is taking a ballot within its membership as to the soundness of the Plumb plan as a legislative measure for the nationalization of the railroads of the United States. A copy of the bill is being mailed to each member without comment, and he is requested to make his own decision after reading the bill and vote yes or no on the propriety of favorable action on the bill by Congress.

ASKS MORE POWER

Federal Trade Commission Would Like to Watch Business Organizations

WASHINGTON, Sept. 9.—The Federal Trade Commission has asked for an important extension of its powers from Congress. Chairman Murdock, accompanied by the other Commissioners, appeared before the House Judiciary Committee to submit a list of suggested amendments to the present law which, he said, would help to lower the high cost of living. The most important of these requests of the Federal Trade Commission was that the commission be given control over voluntary associations of business men. Commissioner Murdock said it would include such organizations as the American Iron and Steel Institute. He asked that the commission be given the power to watch these organizations as a policeman to see that they did not touch on price questions. He declared that there was a twilight zone in which it was difficult to determine whether the law was being violated.

"If your organization determines that there has been no violation of law," asked Representative Steele of Pennsylvania, "would that give immunity to the association?"

"No," answered Chairman Murdock, "it would not bind the Department of Justice. If our judgment were so poor as that, the Department of Justice ought to prosecute."

Representative Igoe of Missouri interposed that he thought it would be unfair to have the Federal Trade Commission declare a transaction legal, and then have the Department of Justice prosecute. Chairman Murdock, however, could offer no solution.

The Federal Trade Commission also asked that the Clayton act be amended to forbid discrimination in buying as well as in selling, and that cumulative quantity discounts be prohibited. Another recommendation asked that the minimum capital of corporations subject to the commission be fixed at $500,000 instead of a million dollars. The commissioner further suggested that it be given authority to fix resale prices at the request of anyone interested. Another request of the Federal Trade Commission was for authority to enforce a blue sky law.

Steel Corporation Orders Increase Again

Unfilled orders on the books of the United States Steel Corporation, Aug. 31, were 6,109,103 tons, compared with 5,578,661 tons on July 31. This is an increase of 530,442 tons, against an increase for July of 685,806 tons, and an increase for June of 610,545 tons. The unfilled orders a year ago were 8,759,042, or 2,649,939 tons more. The table below gives the unfilled tonnage for the Steel Corporation at the close of each month beginning with January, 1916:

	1919	1918	1917	1916
January	6,684,268	9,477,853	11,474,054	7,922,767
February	6,010,787	9,288,453	11,576,697	8,568,966
March	5,430,572	9,056,404	11,711,644	9,331,001
April	4,800,685	8,741,882	12,183,083	9,829,551
May	4,282,310	8,337,623	11,886,591	9,937,798
June	4,892,855	8,918,866	11,383,287	9,640,458
July	5,578,661	8,883,801	10,844,164	9,593,592
August	6,109,103	8,759,042	10,407,049	9,660,357
September	.....	8,297,905	9,833,477	9,522,584
October	.....	8,353,293	9,009,675	10,015,260
November	.....	8,124,663	8,897,106	11,058,542
December	.....	7,379,152	9,381,718	11,547,286

The largest total of unfilled orders was on April 30, 1917, when it was 12,183,083 tons; the lowest was on Dec. 31, 1910, when the total was 2,605,747 tons.

The first number of the Youngstown Sheet & Tube Co.'s *Bulletin* is dated Aug. 15, and contains, besides the news of the departments of the plant, numerous photographs of employees and their families, their homes and their sports. The introductory editorial says: "The *Bulletin* is unique among publications of its kind in the fact that every line which it contains was written by Sheet & Tube people, and even the cartoons, art work and photographs with which it is illustrated were made without assistance from outsiders."

Swiss Industrial Mission Here

An industrial mission from Switzerland, consisting of about 200 manufacturers, merchants and men interested in scientific pursuits, which arrived in New York, Sept. 8, left on Sept. 11 for a trip to the principal industrial centers of the country, including Albany, Schenectady and Buffalo; Cleveland, Detroit, Gary, Ind., Chicago, Milwaukee, Minneapolis, St. Paul, St. Louis, Indianapolis, Cincinnati, Pittsburgh and Philadelphia. Heading the mission is Col. Arnold Spychiger, and assisting him is Alfred Waechter, sub-manager of Escher Wyss & Co., Zurich, Switzerland. Alfred Zweifel, who preceded the mission to New York, has opened temporary offices in the Woolworth Building through the courtesy of the Liberty Steel Products Corporation. About 25 members of the mission represent machinery interests of Switzerland.

The mission will arrive in New York again about Oct. 4, and will make its headquarters at the Hotel McAlpin. Later a trip will be made to Boston. The mission will return to Switzerland on the steamship New Amsterdam, which sails Oct. 8. The delegation is being assisted in its tour by the Chamber of Commerce of the United States and local boards of trade and chambers of commerce are arranging to show the members every courtesy.

Iron Ore a Product of Bacteria

Iron ore is the product of a distinct variety of bacteria, according to a special paper on that subject which is being issued by the Geological Survey. It is to be known as Professional Paper No. 113 with the title "Iron Depositing Bacteria and Their Geologic Relations."

E. C. Harder of the United States Geological Survey, who has examined deposits of iron ore in many countries for the special purpose of determining their mode of origin, has recently made close studies of the action of bacteria in forming iron ores. He has found the so-called "iron bacteria" actively engaged in the deposition of compounds of iron not only in surface iron-bearing waters but in mine waters to depths of several hundred feet and has made laboratory cultures of various iron-depositing bacteria.

A model of a precipitation outfit, illustrating the Cottrell precipitation process, will be exhibited by the General Electric Co. at the Chemical Exposition which is to be held at the Coliseum, Chicago, Sept. 22 to 27. The model is the property of N. H. Gellert, of the Gellert Engineering Co., which holds the precipitation patents as applied to blast furnaces. It was made by the General Electric Co. and is completely operative. Also of special interest will be an exhibit board showing welded terminals for flexible cables used on blast furnaces. Chester T. McLoughlin of the power and mining department, Schenectady works, will be in charge and will be assisted by Raymond Barclay and several representatives from the Chicago office of the General Electric Co.

The first motor transport school to be established by the Federal Government was formally opened at Camp Holabird, near Baltimore, Sept. 5. Four hundred men, 60 of them officers, have been enrolled. Three other schools are to follow. The one just started is in charge of Col. George P. Hawes. Secretary of War Baker and a number of army officers were present at the opening and inspected the buildings and the work which will be done by the men. The welding plant is considered one of the finest in the country. There are 11 departments.

Since the request of the National Foreign Trade Council for a reduction of unnecessary Government messages sent by cables to the President and the heads of the State, War, Navy and Commerce departments, O. K. Davis, secretary of the council, says cable conditions on the Pacific have improved. The delay on outgoing messages has been reduced to about 65 hr., although delay on incoming cables is still about 250 hr.

Labor Leaders Hesitate to Declare Strike

Air of Disappointment Prevails at Washington Meeting—Message of the President Not Made Public—No Decision as to Quitting Work

WASHINGTON, Sept. 9.—After two sessions to-day the representatives of 24 unions of steel workers and allied trades announced that no statement of their plans for the threatened steel strike would be made public until to-morrow. No intimation was forthcoming concerning the program, but there was an air of disappointment in the gathering both over the anti-strike utterances of President Wilson and the conservative influence exerted by President Gompers of the American Federation of Labor before leaving for the deathbed of his father. Neither Chairman Fitzpatrick nor Secretary Foster, who drew up the statement which was to come out on Wednesday, would talk about the meeting or about the proposition to compromise with the United States Steel Corporation by leaving the whole question to the White House conference next month. It is significant that no announcement was made of the President's reply to Mr. Gompers' appeal to him to use his influence to obtain a conference in Washington with the union officials and officials of the United States Steel Corporation.

Left to Secretary Wilson

The latest indications are that the selection of the men whom the President is to invite to attend the Washington conference has been entrusted largely to Secretary of Labor Wilson.

Fitzpatrick's Threat

"If President Wilson got a kick in the face as we did, he probably would want to start something. That's just the thing we are going to do—call a strike against the steel trust if they refuse to meet us and discuss our grievances." So spoke John Fitzpatrick, president of the Chicago Federation of Labor and chairman for organizing the iron and steel workers, at a meeting of the federation Sept. 7, at which he was unanimously renominated for the presidency of the organization.

"We have organized 15,000 of the iron and steel workers," he added. "They have voted to strike and we are going to set a date for it, if the steel trust persists in refusing to recognize us.

"A meeting of the executive committee of the American Federation of Labor, along with the committee for organizing the workers and the officers of the 24 international unions to which the workers belong, is going to be held in Washington on Tuesday, where our plans will be decided. The strike has to come if we are turned down, despite the plan of President Wilson to call a conference of capital and labor next month."

Gompers to the President

President Wilson was asked in a telegram sent him Sept. 5 by Samuel Gompers, president of the American Federation of Labor, to say whether a conference could be arranged before Tuesday, Sept. 9, when the presidents of the 24 international unions in the steel industry could meet at Washington to take such action as they might deem necessary.

The telegram to the President follows:

"The executive committee, representing the various international unions in the iron and steel industry, met today to consider the awful situation which exists in many of the iron and steel industry centers. The coercion, the brutality employed to prevent men and unions from meeting in halls engaged upon private property and in the open air, the thuggery of the corporation's emissaries, the wholesale discharge of members of the union—have brought about a situation that it is exceedingly difficult to withhold or restrain the indignation of the men and the resistance that they declare it is their purpose to prevent.

"The executive committee, relying upon the case as presented to you last week, and your earnest declaration to endeavor to bring about a conference for the honorable and peaceful adjustment of the matters in controversy, have thus far been enabled to prevail upon the men not to engage in a general strike. We cannot now affirm how much longer we shall be able to exert that influence, but we urge you, even in the great work in which you are engaged, to give prompt attention to this most vital of issues; for if the men can no longer be restrained it is impossible to foretell what the future may hold in store, for an industrial crisis may ensue and frustrate the project which you have worked for peaceful and honorable adjustment of industrial affairs in our country.

"A meeting of all presidents of the 24 international unions in the steel industry has been called to take place on Tuesday, Sept. 9, in Washington, to take such action as they may deem necessary. May we not have your reply on or before that time as to whether or not a conference with the Steel Corporation is possible?"

Gary Denies Gompers' Charges

Speaking for the United States Steel Corporation, Judge Gary made a general denial of the charges made by Samuel Gompers in a telegram to President Wilson. He reiterated his former statements that the management would not recognize the unions in the steel industry nor would it deal directly with any of the union representatives in their efforts to bring about a conference.

A report gained some circulation on the floor of the Stock Exchange that "Gary would have to recognize the unions." Referring to this rumor Judge Gary said "it is utterly without foundation."

Strikers at Hammond, Ind., Killed

In a fight with the police on Sept. 9, five striking workmen of the Standard Steel Car Co., Hammond, Ind., were killed and 15 wounded. About 2000 steel workers at the plant had been on strike for more than two months until Sept. 8, when about 200 of the strikers returned to work. When these men were on their way to the plant, about 1000 of the strikers gathered a short distance from the plant and threatened the workers. The police were called and ordered the mob to disperse. The men refused and in the attempt to arrest the leaders there was firing by both the police and the strikers. The town was in control of Indiana State troops until about two weeks ago when they were withdrawn.

Blockade of steel shipments from the Mahoning and Shenango valleys has been largely broken by an increase in the car supply, traffic managers report. Railroads have been using larger numbers of low capacity gondolas for movement of ore and they are loaded with steel as fast as they arrive. Traffic experts say the Railroad Administration has anywhere from 60,000 to 75,000 such cars available to make good any shortage of ore cars that may occur. H. D. Rhodehouse, traffic manager the Youngstown, Ohio, Chamber of Commerce, states during the recent car shortage one steel corporation with plants in Youngstown reported 200,000 tons of finished steel on the ground waiting for cars.

Iron and Steel Markets

NO VISIBLE STRIKE CLOUDS

Labor Situation Disquieting at Most

Pig Iron Strong—Plates $3 Lower—Pittsburgh Basing Issue—August Steel Output

While the talk of a strike of iron and steel plant workers is still a disturbing factor, mill operations are proceeding and selling is going on as though the labor agitation were of another continent. Neither stress to produce by the mills nor struggle to get finished material by the consumers is conspicuous. If anything, a slackening from the active negotiations of the last three months describes the situation at the moment, a matter of no apparent significance.

The trade is not taking very seriously the conference of union officials at Washington. It regards it as a setback that following the publication of the appeal to the President made by President Gompers of the American Federation of Labor the reply of the President was not given regarding the efforts requested of him to make Steel Corporation officials parties to the meeting. It is not reassuring to learn that for the October labor conference of employers, employed and the public, the selection of the representatives of the public is largely, if not wholly, in the hands of the Secretary of Labor.

Not much headway is being made against the bookings piled up in sheets, wire, pipe, steel bars and other lines in which demand has long been outstanding. Shortage of cars rivals scarcity of skilled help and of common labor in checking output.

Leading sheet mills at that are operating at 95 per cent of capacity and tin plate mills even slightly better. Pipe mills have four and even seven and eight months' work ahead of them. What little can be obtained for this year's delivery commands higher than commonly quoted prices. One pipe maker has sold in the last three months twice the rated capacity.

The ingot production of the country in August, based on the statistics of the American Iron and Steel Institute, shows an increase of nearly 5½ per cent over July. The average daily output of 121,036 tons a day corresponds to an annual rate of 37,392,000 tons. Including the lean months of the year, the total production of 1919 should total 37,000,000 tons.

The delays in railroad buying have caused some shutdowns. Possibly as much as 500,000 tons of rails represents the need to keep the roads in the condition under which they were to be turned back to their owners, yet the placing of contracts on which prices were submitted weeks ago is delayed. The unemployment problem is apparently the least of the worries of the Railroad Administration.

A rather definite break has taken place in plates. Some of the larger mills have evidently decided not to leave all the more attractive inquiries to mills which have been taking domestic as well as export business at 2.50c., Pittsburgh, and while 2.65c. is still the quotation with leading makers, large offerings may be covered with no great difficulty at the lower figure.

Late sales for export total 45,000 to 50,000 tons and for railroad car repairs 20,000 tons. An important Chicago plate mill has sold the bulk of its 1919 output. Some of the export sales figure back to 2.48c., Pittsburgh.

Sales of malleable and foundry pig iron for delivery in the first half of next year made to date in the Chicago district amount to about 200,000 tons. Considerable selling for that delivery has been done in other districts. Most of these transactions have been at somewhat higher prices than ruling for this year. Furnaces are still conservative as to prices and sales for delivery after Jan. 1. A limited demand for basic with sagging price tendency is in marked contrast with the strong foundry iron market. The silvery iron situation has been relieved by the settlement of labor troubles in the Jackson County, Ohio, district.

The answer of the United States Steel Corporation and subsidiaries in the case involving the Pittsburgh basing point before the Federal Trade Commission challenges the jurisdiction of the commission to fix prices. An interesting feature of the answer is the statement that iron and steel are sold generally to the manufacturers of agricultural implements without regard to the Pittsburgh base.

Structural steel business looks better. Awards of sizeable projects total 21,000 tons, including 7000 tons for the government hangars at Lakehurst, N. J. The Carnegie Steel Co. will supply the 25,500 tons of plates, shapes and bars for the two battleships to be built at the Brooklyn Navy Yard; on this the plates go at 2.50c.

Nearly half of the manufacturers of sheets and tin plate are out of the market for this year. Recent sales of tin plate include one lot of 200,000 boxes, one of 100,000 boxes and several of about 75,000 boxes, all for shipment in 1919.

Some steel bar business has been taken at 2.50c., which is an indication of how much deferred are deliveries at the 2.35c. basis.

Forging blooms have also brought $3 above the ruling market.

Pittsburgh

PITTSBURGH, Sept. 9.

There have been no special developments in the labor situation in the past week, but thought of a general strike in the iron and steel trade has pretty well passed, and it is not believed it will take place. The action of Samuel Gompers, president of the American Federation of Labor, in asking President Wilson for an earlier conference than the one scheduled to be held early in October between employers of labor and employees, has evidently not met the approval of the President, as President Gompers has refused to make public the reply he received. It is known that President Wilson declined to change his program for a conference early next month. It is the general opinion that the labor leaders have overplayed their hands, and that every day that goes by sees their cause getting weaker.

No important changes in prices took place during the week, but one leading producer of foundry iron has made some fair-sized sales for last quarter delivery at $1 per ton advance over the regular price. The pig iron situation is very strong, and producers firmly

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Sept. 9, 1919	Sept. 2, 1919	Aug. 12, 1919	Sept. 10, 1918
No. 2 X, Philadelphia‡	$30.60	$30.60	$29.60	$34.40
No. 2, Valley furnace†	26.75	26.75	26.75	33.00
No. 2 Southern, Cin'ti†	31.10	31.10	31.10	36.60
No. 2, Birmingham, Ala.†	27.75	27.75	27.50	33.00
No. 2, furnace, Chicago*	26.75	26.75	26.75	33.00
Basic, deliv., eastern Pa.	26.60	26.60	26.60	32.90
Basic, Valley furnace	25.75	25.75	25.75	32.00
Bessemer, Pittsburgh	29.35	29.35	29.35	36.60
Malleable, Chicago*	27.25	27.25	27.25	33.50
Malleable, Valley	27.25	27.25	27.25	33.50
Gray forge, Pittsburgh	27.15	27.15	27.15	33.40
L. S. charcoal, Chicago	32.75	32.75	31.75	37.85
Rails, Billets, Etc.,				
Per Gross Ton:				
Bess. rails, heavy, at mill	45.00	45.00	45.00	55.00
O.-h. rails, heavy, at mill	47.00	47.00	47.00	57.00
Bess. billets, Pittsburgh	38.50	38.50	38.50	47.50
O.-h. billets, Pittsburgh	38.50	38.50	38.50	47.50
O.-h. sheets bars, P'gh.	42.00	42.00	42.00	51.00
Forging billets, base, P'gh.	51.00	51.00	51.00	60.00
O.-h. billets, Phila.	42.50	42.50	42.50	51.30
Wire rods, Pittsburgh	52.00	52.00	52.00	57.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.745	2.745	2.745	3.73
Iron bars, Pittsburgh	2.75	2.75	2.75	3.50
Iron bars, Chicago	2.62	2.62	2.62	3.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, New York	2.62	2.62	2.62	3.145
Tank plates, Pittsburgh	2.50	2.65	2.65	3.25
Tank plates, New York	2.77	2.92	2.92	3.495
Beams, etc., Pittsburgh	2.45	2.45	2.45	3.00
Beams, etc., New York	2.72	2.72	2.72	3.245
Skelp, grooved steel, P'gh.	2.45	2.45	2.45	2.90
Skelp, sheared steel, P'gh.	2.65	2.65	2.65	3.25
Steel hoops, Pittsburgh	3.05	3.05	3.05	3.50

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire.	Sept. 9, 1919	Sept. 2, 1919	Aug. 12, 1919	Sept. 10, 1918
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	4.35	4.35	4.35	5.00
Sheets, galv., No. 28, P'gh.	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Fence wire, base, P'gh.	3.00	3.00	3.00	3.25
Barb wire, galv., P'gh.	4.10	4.10	4.10	4.35
Old Material,				
Per Gross Ton:				
Carwheels, Chicago	$24.00	$26.00	$26.00	$29.00
Carwheels, Philadelphia	24.50	24.50	24.50	29.00
Heavy steel scrap, P'gh.	19.50	19.50	21.50	29.00
Heavy steel scrap, Phila.	18.50	19.00	19.50	29.00
Heavy steel scrap, Ch'go.	18.50	20.00	20.50	29.00
No. 1 cast, Pittsburgh	23.50	23.50	23.50	29.00
No. 1 cast, Philadelphia	25.00	25.00	25.00	29.00
No. 1 cast, Ch'go, net ton	24.00	24.00	24.00	30.00
No. 1 RR. wrot, Phila.	26.50	26.50	26.50	34.00
No. 1 RR. wrot, Ch'go, net	19.00	19.00	20.50	29.75
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	$4.75	$4.85	$4.00	$6.00
Furnace coke, future	4.75	4.12	4.12	6.00
Foundry coke, prompt	5.50	5.50	5.00	7.00
Foundry coke, future	5.75	5.50	5.25	7.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	23.00	23.50	22.00	26.00
Electrolytic copper, N. Y.	22.50	22.75	21.50	26.00
Spelter, St. Louis	7.65	7.50	7.25	9.25
Spelter, New York	7.70	7.85	7.60	9.50
Lead, St. Louis	5.75	5.75	5.50	7.75
Lead, New York	5.90	5.90	5.60	8.05
Tin, New York	50.50	56.00	70.00	83.00
Antimony (Asiatic), N. Y.	9.25	9.25	9.00	14.00
Tin plate, 100-lb. box, P'gh.	$7.00	$7.00	$7.00	$7.75

believe that the pig iron market will be higher early in the new year than it is now. Consumers are actively trying to buy iron for first quarter and first half, but producers are not willing to sell, owing to the uncertainty as to cost.

New orders for iron and steel products being placed with the mills are lighter than for some time, but this is largely for the reason that consumers are fairly well covered over remainder of this year, and are specifying freely against contracts. Steel ingot operations in the Pittsburgh district are now on the basis of about 90 per cent, and this rate will be increased if men can be obtained and also cars in which to ship the finished products. There is a very severe shortage in the supply of cars, notably box cars, and last week the situation was bad, nearly all concerns reporting they were not receiving more than half the cars needed.

The coke market is firm, and best grades of standard furnace coke are held at $4.75 per net ton oven. Scrap is in light demand, but prices are holding firmly. The plate market is also quiet, and there is more inclination on the part of the mills to meet the recent 2.50c. price than has been shown for some time.

Pig Iron.—Very little is being done in the local market in the way of new sales of pig iron. Bessemer and basic are particularly quiet, but there is a fair amount of inquiry for foundry and malleable. One leading producer has sold upwards of 5000 tons of No. 2 foundry for last quarter delivery at $1 per ton advance over the regular price, or at $29.75 at Valley furnace. The Westinghouse Electric & Mfg. Co. is inquiring for a round tonnage of foundry iron for the Westinghouse Machine Co. for first half delivery, but so far the furnaces are not inclined to quote present prices on this inquiry. Merchant furnaces that sell their product in the open market are pretty well sold up for the remainder of this year. The Carnegie Steel Co. has started another stack, and is now operating 50 of its 59 furnaces. Only two blast furnaces in the Mahoning Valley are idle, these being Hannah of the Republic Iron & Steel Co. and Niles of the Carnegie Steel Co. For this year delivery we quote:

Basic pig iron, $25.75; Bessemer, $27.95; gray forge, $25.75; No. 2 foundry, $25.75; No. 3 foundry, $26.25, and malleable, $27.25; all per gross ton at Valley furnaces, and freight rate for delivery in the Cleveland and Pittsburgh districts being $1.40 per ton.

Ferroalloys.—The inquiry for ferromanganese is active, but two large consumers who were recently in the market have withdrawn their inquiries, and will not buy for the present, believing that prices may be lower. The Brier Hill Steel Co., Youngstown, Ohio, is inquiring for 300 tons of ferromanganese for prompt shipment, and may close this week. The demand for silvery iron is also active, and numerous sales have been made recently for delivery over the remainder of this year. English ferromanganese is now offered at $95, c.i.f. New York, freight added to point of delivery. Domestic, running from 78 to 82 per cent, is offered at $105, delivered at consumers' mills.

We quote 78 to 82 per cent domestic ferromanganese $105 to $110 delivered, with a reduction of $1.50 to $1.75 per unit for lower percentages. We quote 50 per cent ferrosilicon at $85, and 18 to 22 per cent spiegeleisen at $32 to $35, delivered. Prices on Bessemer ferrosilicon are: 9 per cent, $47.75; 10 per cent, $49.75; 11 per cent, $53.05; 12 per cent, $56.35. We quote 6 per cent silvery iron, $36.75; 7 per cent, $38.50; 8 per cent, $40.25; 9 per cent, $42.25, and 10 per cent, $44.75. About $3 per gross ton advance is charged for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, which have a uniform freight rate of $2.90 per gross ton for delivery in the Pittsburgh district.

Billets and Sheet Bars.—There is still a shortage in supply of sheet bars, but deliveries of bars by the steel plants to the sheet and tin plate mills in the past week were a little better. There is practically no surplus steel in billets and sheet bars being offered in the open market. One leading producer has sold a tonnage of forging blooms for delivery over the remainder of this year at $54, Pittsburgh, which is $3 per ton higher than the regular price. None of the steel mills is able to get enough skilled labor. Common labor is also

scarce, and this is keeping down output to some extent. We quote:

We quote 4 x 4 in. soft Bessemer and open-hearth billets at $38.50, 2 x 2 in. billets at $42; sheet bars, $42; slabs, $41, and forging billets, $51 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Steel Rails.—Very little is being done in standard sections, but the demand for light rails is active and one mill reports it is sold up over the next three months. The Jones & Laughlin Steel Co. is quoting prices on about 3000 tons of light rails in sections from 12 lb. up to 40 lb.

Structural Material.—While inquiry is active, the amount of work being placed is relatively small. The largest contract placed during the week was for the Government dirigible hangars at Lakehurst, N. J., 8000 tons, which went to the Bethlehem Bridge Corporation. The price named in this contract for the work erected is said to have been very low, and was $100,000 less than that named by one other bidder. The American Bridge Co. has taken 1500 tons for a new building for the Toledo Machine & Tool Co., Toledo, Ohio, 1500 tons for a building for the Paige Motor Car Co., Detroit, and 700 tons for oil tank work for the Humble Oil Co. in Texas. The McClintic-Marshall Co. has taken 400 tons of bridge work for the Baltimore & Ohio Railroad in this city. We quote plain material at 2.45c., Pittsburgh.

Plates.—The Carnegie Steel Co. has received a contract from the Navy Department at Washington for 25,500 tons of plates, shapes and bars for the new battleships, Nos. 49 and 50. It will be recalled that on this contract the Carnegie company bid 2.50c. for plates, 2.35c. for steel bars, and 2.40c. for shapes, and it is understood these were the prices at which the Government awarded the contract to this company. There is more disposition on the part of the plate mills to name 2.50c. to large consumers, yet sales of plates are being made right along at 2.65c. at mill, the regular price. It is said the steel car companies are paying 2.55c. for the limited quantity of plates they are buying. Several mills have quoted the 2.50c. price to large consumers recently. The demand for plates is only fair, and none of the plate mills is able to operate in full, owing to lack of orders. We now quote sheared tank plates at 2.50c. to 2.65c., f.o.b. Pittsburgh, the price depending largely on the buyer and the tonnage involved in the order.

Iron and Steel Bars.—The demand for steel bars is abnormally heavy, and large producers like the Carnegie Steel, Jones & Laughlin, Cambria, Republic, Youngstown Sheet & Tube companies and others are well filled up on steel bars over the remainder of this year. The Cambria Steel Co. is still naming 2.50c. on steel bars, an advance of $3 a ton over the regular price, and says it can readily sell all the bars it cares to at the higher price. The demand for iron bars is also active.

We quote steel bars, rolled from billets, at 2.35c. and from old steel rails, 2.45c. Pittsburgh mills rolling iron bars quote at 2.75c., Pittsburgh, plus full freight rate to point of delivery.

Sheets.—The shortage of cars is playing havoc with shipment of sheets by nearly all mills. One leading interest reports it was short 200 cars last week at its various mills, but the situation yesterday and to-day, as regards car supply, is a little better. Sheet bars are not coming in as promptly as desired and nearly all sheet mills are running from hand to mouth on bars. The demand is active, but most consumers have covered their needs over the remainder of this year and mills have 60 days' work ahead if they do not take another order. This week the American Sheet & Tin Plate Co. is operating about 95 per cent of its sheet mill capacity, and on Monday, Sept. 15, expects to start its Hyde Park plant at Hyde Park, Pa., which contains its hot sheet mills, which has been down for some time. The export demand is also active, but most large mills are not quoting actively on export inquiry, having all the domestic business on their books they can take care of for practically the remainder of this year. It is said there is no cutting in prices, which are given on page 749.

Tin Plate.—Some consumers of tin plate who were advised by their sources of supply to cover themselves over this year, but failed to do so, recently have had to come in the market and buy heavily for this year delivery. One consumer has bought about 200,000 boxes, another 150,000, and there have been smaller sales of 75,000 to 100,000 boxes for delivery this year. The demand for tin plate is light, as the consumers are now well covered over the remainder of this year. The mills are operating to as full capacity as supply of labor and steel will permit. The American Sheet & Tin Plate Co. is running this week to 96 per cent of its hot tin mill capacity. The export inquiry is active, but is usually for small lots, ranging from 5000 to 25,000 boxes. It is not expected that any of the tin plate mills will announce prices for next year before November, and it is almost certain that the price of tin plate for next year will not be lower than it was for this year. We quote production tin plate for domestic use at $7 per base box, for export, $6.50 to $6.75, and stock items $6.50 to $6.75, most of the business going lately, it is stated, at the higher figure. Prices on terne plate, for which the demand is heavy, are given on page 749.

Rods.—The export and domestic inquiry is heavy. Two local rod mills have sold practically all the rods they care to sell for this year's delivery, and are not quoting actively. We note a sale of 300 tons and another of 200 tons of soft open-hearth rods at $52 f.o.b. Pittsburgh. It is said regular prices on rods are holding very firm. These prices are given on page 749.

Wire Products.—Buying in wire and wire nails is not as active as it has been, most consumers being covered over the remainder of this year. It is said the American Steel & Wire Company is catching up on deliveries to some extent, but has very little material to sell for this year delivery. It is not believed this company will make any advance in its prices in the near future. The export inquiry for wire and wire nails is very active, but local mills are not quoting on most of the business offered, being filled up with domestic business on practically all material they can make for this year. Prices now being quoted are given on page 749.

Hoops and Bands.—The demand is active, and mills rolling hoops and bands are filled up for at least two months. So far the Cambria Steel Co. is the only company that has advanced prices, but others may do so in the near future. We quote steel hoops and bands at 3.05c., with usual extras.

Spikes.—The demand for small spikes is very heavy, and makers of these are sold up for two or three months, and are four to six weeks back in shipments. Standard spikes are not active, the railroads buying only small lots for repair work.

We quote standard spikes, 9/16 x 4½ in., at $3.35 base per 100 lb. in carload lots of 200 kegs of 200 lb. each, and small spikes, ⅝ in., 7/16 in. and smaller, at $3.85 to $4 per 100 lb. in carload lots of 200 kegs of 200 lb. each, plus usual extras. Boat and barge spikes, $3.85 to $4 per 100 lb. in carload lots of 200 kegs of 200 lb. each, all f.o.b. Pittsburgh. For less than carloads, 1c. per lb. higher is asked.

Hot-Rolled Strip Steel.—The mills report an active demand and some consumers have recently covered their needs over the remainder of this year at full prices. Two local mills report they are practically filled for this year. We quote hot rolled strips for deep drawing and stamping purposes at 3.30c., Pittsburgh.

Cold-Rolled Strip Steel.—The demand is more active than for some time, consumers and jobbers now desiring to cover their needs over the remainder of this year. Makers report specifications against contracts as coming in freely. Prices are said to be firm.

We quote cold-rolled steel at $5.65 base per 100 lb., f.o.b. Pittsburgh, for 1½ in. and wider, 0.100 in. and thicker hard tempered in coils 0.20 carbon and under. Boxing charge 25c. per 100 lb.

Cold-Finished Steel Bars.—The demand for this material from automobile builders and from concerns making automobile parts is heavy, but from the implement trade and other consumers is only fair. Mills making shafting are now operating at about 75 per cent

of capacity, or better. We quote cold-finished steel bars at $3.60 per 100 lb. per base sizes, in carload lots, and $3.85 in less than carload lots, f.o.b. Pittsburgh. Extras, as adopted by the manufacturers and effective from Aug. 18, were given in full on page 547 of THE IRON AGE of Aug. 21.

Nuts and Bolts.—Makers report the demand fairly active and some consumers and also jobbers are now anxious to cover their needs for fourth quarter. While some makers have sold in a limited way for this delivery, others are holding off, believing that prices may be higher for fourth quarter. Discounts in effect from Aug. 4, which are said to be holding firmly, are given on page 749.

Rivets.—The demand is fairly active for structural rivets, but ship and boiler rivets are not active. We quote large structural and ship rivets at $3.90 and large boiler rivets at $4 base, f.o.b. Pittsburgh.

Skelp.—Mills are filled up over the remainder of this year and have some business on their books for first quarter delivery.

Iron and Steel Pipe.—There is no let-up in the demand for line pipe and oil well tubular goods and every day the mills are turning down a good deal more business than they are booking, for the reason that they cannot make the delivery wanted. One leading mill reports that on line pipe and oil well goods it is filled over the next seven or eight months, and others report they are filled for four months. Two or three mills have some material they can spare for last two months of the year, but are holding this capacity open in belief that prices on tubular goods may be higher. One leading mill reports that for the last three months it has booked each month in actual orders more than double its maximum capacity. Prices on iron and steel pipe are very firm and discounts are given on page 749.

Boiler Tubes.—Makers report the demand for locomotive and boiler tubes as heavier and merchant tubes are also more active. Prices are still being shaded by a few makers who do not charge regular customers the usual extras. Discounts are given on page 749.

Old Material.—The local scrap market is limited in sales, large consumers apparently not being interested in the market at present, and on the other hand, dealers are not pressing the market to make sales, believing there will be a recovery in prices later. The fact that steel operations in this district are on about a 90 per cent basis indicates a heavy consumption of scrap, and dealers claim demand is bound to be better very soon. We note a sale of 500 tons of machine shop turnings at $12.50 per gross ton delivered Brackenridge, Pa.

Heavy steel, melting, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	$19.50 to $20.00
No. 1 cast for steel plants	23.50 to 24.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh	25.00 to 25.50
Compressed steel	18.00 to 19.00
Bundled sheet, sides and ends, f.o.b. consumers' mills, Pittsburgh district	15.50 to 16.00
Bundled steel stamping	13.00 to 13.50
No. 1 busheling	18.00 to 18.50
Railroad grate bars	18.00 to 18.50
Low phosphorus melting stock (bloom and billet ends, heavy plates) ¼ in. and heavier	25.00 to 25.50
Iron car axles	31.00 to 32.00
Locomotive axles, steel	31.00 to 32.00
Steel car axles	28.00 to 29.00
Railroad malleable	20.00 to 20.50
Cast iron wheels	23.50 to 24.00
Rolled steel wheels	22.00 to 23.00
Machine shop turnings	12.50 to 12.75
Sheet bar crop ends (at origin)	23.00 to 24.00
Heavy breakable cast	21.50 to 21.75
Cast iron borings	15.50 to 15.75
No. 1 railroad wrought	22.00 to 23.00

Coke.—The demand for prompt furnace and foundry coke is large enough to take up promptly all the prompt coke offered, and prices are fairly firm. We note sales of 300 to 400 cars of standard grade furnace coke at $4.75 per net ton at oven, and reports are that slightly higher prices have been paid. Export inquiry for coke is active, and one local producer is making shipments of coke to Brazil to be used for smelting purposes. We quote standard grades of blast furnace coke for prompt shipment at $4.75 per net ton at oven, but no contracts are being made. We quote 72-hr. foundry coke of standard grades at $5.75 to $6 per net ton at oven. Output in the week ending Aug. 30 was 242,395 tons, an increase over the previous week of nearly 2000 tons.

Steel Ingot Output Still Increasing

The output of steel ingots by steel works in the United States in August amounted to 3,267,976 gross tons, or 121,036 tons a day for 27 working days, as compared with 2,984,858 tons, or 114,802 tons a day in July. The August output was at the rate of about 37,392,124 gross tons a year, based on 309 operating days and on reports to the American Iron and Steel Institute from 30 companies which in 1918 made 84.03 per cent of the total production.

The table below gives the tonnage of steel ingots produced in 1918 by 29 companies, making in 1917 about 85.10 per cent of the entire amount and for the past eight months figures from 30 companies making 84.03 per cent of the production in 1918:

Monthly Production of Steel Ingots of Companies Reporting —Gross Tons

	Open Hearth	Bessemer	All Other	Total
January, 1918	1,763,356	429,588	10,901	2,203,845
February	1,805,233	454,457	14,051	2,273,741
March	2,331,048	763,255	16,078	3,110,381
April	2,377,974	769,249	16,187	3,163,410
May	2,475,131	796,244	15,858	3,287,233
June	2,281,718	786,380	15,348	3,083,446
July	2,311,545	784,997	17,093	3,113,635
August	2,299,177	766,860	17,643	3,083,680
September	2,407,993	772,863	16,802	3,197,658
October	2,527,776	807,043	17,377	3,352,196
November	2,291,720	753,409	15,631	3,060,760
December	2,273,189	706,844	12,273	2,992,306
Total, 1918	27,145,860	8,591,189	185,242	35,922,291
January, 1919	2,351,153	749,346	7,279	3,107,778
February	2,043,635	655,206	5,842	2,704,683
March	2,100,528	555,332	6,405	2,662,265
April	1,732,447	500,770	6,494	2,239,711
May	1,506,015	414,392	8,617	1,929,024
June	1,692,257	521,634	5,328	2,219,219
July	1,875,630	625,246	7,300	2,508,176
August	1,988,651	748,212	9,218	2,746,081
8 months	15,290,316	4,770,068	56,483	20,116,937

Country's Estimated Production in 1919

The monthly production for the entire country, estimated from the tonnage reports of the 30 companies which made 84.03 per cent of the total output for 1918, is as follows:

January, 1919	3,698,415	June	2,640,984
February	3,218,711	July	2,984,858
March	3,168,232	August	3,267,976
April	2,665,371		
May	2,295,637	8 months	23,940,184

Will Build New Open-Hearth Plant

The Follansbee Brothers Co., Pittsburgh, operating for some years an open-hearth steel plant, sheet and tinplate mills at Follansbee, West Va., has plans under way for the building of a new open-hearth steel plant to contain four 40-ton furnaces and ten sheet mills at Toronto, Ohio, which is located about eight miles north of Steubenville, and about 12 miles from Follansbee. While no definite decision has been reached, it is likely the company will decide to build this plant at Toronto, but as yet no contracts have been placed. The statement that the company will build a tinplate mill in Canada is incorrect, and probably arose from the fact that it is to be built at Toronto, Ohio, and not in Toronto, Ontario. In case the open hearth steel plant and sheet mills are built, the company will also likely build a large number of houses at Toronto, Ohio, for employees of the new works.

The Farrell-Cheek Steel Foundry Co., Sandusky, Ohio, is now operating its electric furnace for its entire production. Four to five heats are made daily and the company expects to operate the furnace 18 hr. a day after Sept. 15 and 24 hr. a day about Oct. 1.

Chicago

CHICAGO, Sept. 9.

The prospect of an amicable settlement of the labor problem has been clouded through the violent utterances of John Fitzpatrick, member of the organizing committee of the iron and steel workers. In an address here Sept. 7, he asserted that 150,000 mill employees had been organized, and predicted that a strike would be called if recognition from the Steel Corporation were not forthcoming. "The strike has to come if we are turned down," he said, "despite the plan of President Wilson to call a conference of capital and labor next month." The mills discount the claims of Fitzpatrick, their belief being that not more than 20 per cent of their employees have joined the strike movement.

Whatever the future will develop regarding the labor situation, present business is brisk and prices firmer than at any time heretofore this year. The mills are heavily booked in most products and are finding it difficult to take care of the demands for early shipment. Eleven out of 24 members of the National Association of Sheet and Tin Plate Manufacturers are out of the market for the rest of the year, and it is understood that the leading interest is in the same condition.

Structural business will receive an additional impetus if the conference of local contractors and building trades unions in session to-day results in a termination of the lockout which has been in force for two months. There is an increasing demand for 1920 deliveries, but as yet no mills have taken this business in any of the finished products.

Mill operation is decidedly satisfactory in view of the great preponderance of domestic orders and the absence of railroad purchases. The leading interest is now running at 90 per cent of ingot capacity and the foremost independent at about 75. At least 100,000 tons each of foundry and malleable pig iron have been placed for delivery in the first half of 1920. Although they have not changed their base price on foundry, Northern producers have added a dollar to each grade with higher silicon content. Scrap continues weak.

Pig Iron.—Considerable business has been closed for delivery in the first half of 1920, and a portion of it at least has been sold at the present prices. Although the extent of the tonnage so far placed for next year is not definitely known, it is at least in excess of 200,000 tons, about evenly divided between foundry and malleable. Consumers have covered most of their needs for the remainder of 1919, and current purchases are largely confined to small amounts to take care of unlooked for requirements. It is considered probable that some melters underestimated their needs for this half. A foundry which contracted for 2000 tons with a local seller wants the remainder amounting to 1200 tons delivered within the current month. With producers practically sold out for this year, the market is exceedingly strong. Under ordinary conditions, marked advances in prices would be looked for, but producers are evidently observing a conservative policy, not wishing to encourage the present advancing tendency of prices now characterestic of most commodities. Northern quotations on foundry, however, have advanced $1 for each silicon differential above the base, the base remaining unchanged. All the furnaces of the leading Northern producer except one which is being rebuilt are now in blast. Bayview has not blown in its second furnace, as was expected, and the merchant stack of the Inland Steel Co. is expected to go out about the end of this month for repairs. A large steel foundry interest has purchased 1400 tons of low phosphorus an 1000 tons of silvery 10 per cent and over, the latter from Southern producers who add from $4.75 to $5 freight to the furnace quotation, as compared with $3.80 freight from the Jackson County furnaces. One Jackson County stack is now in blast and others are expected to go in soon, the strike difficulties having been settled. The Red River, Tenn., furnace blew in last week and is quoting on a basis of $41.75 for 6 per cent material plus $3.40 freight to Chicago.

The Milton Furnace, Wellston, Ohio, is quoting silvery 6 per cent at $39.50, furnace, or $43.30, Chicago. The silvery situation is most unusual in that four distinct quotations obtain, that of the Bessie, Jackson County, furnace which is $36.75, base, plus $3.85 freight; that of the Southern producers, which is on the same base plus higher freight charges and those of the Red River and Milton furnaces previously mentioned. The heavy demand for silvery has brought up the question of producing it locally and it is possible some steps may be taken in this direction soon.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 50c. per ton.

Lake Superior charcoal, average silicon, 1.50 second half delivery, f.o.b. furnace, average freight to Chicago, $2.50 (other grades subject to usual differentials)	$30.25
Northern coke foundry, No. 1 silicon, 2.25 to 2.75	29.00
Northern coke foundry, No. 2 silicon, 1.75 to 2.25	26.75
Northern high-phosphorus foundry	26.75
Southern coke, No. 1 foundry and No. 1 soft, silicon, 2.75 to 3.25	$34.75 to 35.75
Southern coke, No. 2 foundry, silicon 2.25 to 2.75	33.60 to 34.00
Southern foundry, silicon, 1.75 to 2.25	32.50 to 32.75
Malleable, not over 2.25 silicon	27.25
Standard Bessemer	27.95
Basic	25.75
Low phosphorus (copper free)	40.00
Silvery, 7 per cent	42.05

Ferroalloys.—A large consumer recently purchased 750 tons of ferromanganese at the English price of about $102, Chicago. Since the Eastern producers took action against the British before the Federal Trade Commission, it is reported that the British have withdrawn from the market with the result that domestic makers are holding to $110 delivered. Ferrosilicon and spiegeleisen are quiet.

We quote 80 per cent ferromanganese at $110, delivered, 50 per cent ferrosilicon, at $80, delivered; spiegeleisen, 18 to 22 per cent, $35, furnace.

Plates.—The foremost independent has sold the bulk of its output for the remainder of the year and is no longer soliciting business, although it is making every effort to accommodate old customers in need of small tonnages. The leading interest has booked a good volume of orders, but, like the outside mills selling in this district, could roll considerable additional business. F. M. Bease, Chicago, has ordered 50 40-ton 80,000-gal. tank cars from the American Car & Foundry Co. The Haskell & Barker Car Co., Michigan City, Ind., has ordered 400 tons of plates and shapes from the leading interest to be used in the repair of 300 cars for the Railroad Administration.

The mill quotation is 2.50c. to 2.65c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 3.67c. for plates out of stock.

Bars.—The demand for mild steel and hard steel bars is exceptionally heavy. Buyers are no longer concerned about prices. Their problem is to induce the mills to take their orders. Although most makers are booked ahead for several months, there is an increasing demand for early deliveries, possibly accounted for in part by the desire of buyers to protect themselves against the contingency of a steel strike. Producers, however, are able to take little business for early shipment except a small tonnage here and there to accommodate an old customer. The demand emanates from jobbers and manufacturers of all kinds as well as reinforcing contractors. Bar iron, unlike other bar products, is exceedingly dull. One Western maker, in fact, has suspended operation indefintiely.

Mill prices are: Mild steel bars, 2.35c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; common bar iron, 2.62c., Chicago; rail carbon, 2.55c. mill. Jobbers quote 3.37c. for steel bars out of warehouse.

Cast Iron Pipe.—Business is predominantly in the smaller sizes, the only exception being an inquiry from a contractor in Salt Lake City, Utah, for 1800 tons 30-in. pipe. Elmhurst, Ill., has awarded 1800 tons to the United States Cast Iron Pipe & Foundry Co. and Highland Park, Ill., has received bids for 70 tons, but

has not yet announced its decision. Recent inquiries include:

McCook, Neb., 80 tons, bids in Sept. 12; Wooster, Ohio, 550 tons, bids in Sept. 19; Crowley, Wyo., 150 tons, bids in Sept. 3; Rock River, Wyo., 160 tons, bids in Sept. 10; Bridgeport, Neb., 60 tons, bids in Sept. 20.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., $58.80; 6-in., to 16-in., $55.80; class A and gas pipe, $2 extra.

Bolts and Nuts.—Bolt and nut makers are in much the same situation as manufacturers of wire products. There is an increasing disposition on the part of customers to exceed their specifications and new business is plentiful but difficult to place. Numerous inquiries for 1920 delivery are being received, but as yet manufacturers are unwilling to quote on this business. For mill prices see finished iron and steel f.o.b. Pittsburgh, page 749.

Structural rivets, 4.72c.; boiler rivets, 4.82c.; machine bolts up to ⅞ x 4 in., 50 and 5 per cent off; larger sizes, 40 and 5 off; carriage bolts up to ⅞ x 6 in., 45 and 5 off; larger sizes, 30 and 10 off; hot pressed nuts, square tapped and hexagon tapped, $1.85 off; coach or lag screws, gimlet points, square heads, 50 and 5 per cent off. Quantity extras for nuts are canceled.

Sheets.—Sheets are in an exceptionally strong position, the demand being greatly in excess of the supply available for early shipment. Eleven out of the 24 members of the National Association of Sheet and Tin Plate Manufacturers are out of the market for the remainder of the year and it is reported that the leading interest is in the same condition. Buyers are bringing considerable pressure to bear on the mills to induce them to take business for delivery in the first quarter of 1920, but as yet no such sales have been reported.

Mill quotations are 4.35c. for No. 28 black, 3.55c. for No. 10 blue annealed, and 5.70c. for No. 28 galvanized.

Jobbers quote Chicago delivery out of stock: No. 10 blue annealed, 4.57c.; No. 28 black, 5.62c., and No. 28 galvanized, 6.97c.

Structural Material.—A fair amount of business continues to emanate from the surrounding territory, but the local demand is restricted on account of the building trades lockout. The largest fabricating inquiry which has appeared for some time calls for 3500 tons to be used in the construction of an addition to the finishing building of the No. 2 structural mill of the Inland Steel Co., Indiana Harbor, Ind. Prominent among recent awards was the letting of 1700 tons to the McClintic-Marshall Co. for a dock shed to be built for the Corn Products Refining Co., Edgewater, N. J. Recent fabricating awards include:

Belmont Iron Works, Ironton, Ohio, 500 tons to Mount Vernon Bridge Co., Mount Vernon, Ohio.

Union Motor Truck Co., Bay City, Mich., 300 tons to Whitehead & Kales Iron Co., Detroit.

Bascule bridge, Manitowoc River, Manitowoc, Wis., 322 tons to Milwaukee Bridge Co.

St. Louis Basket & Box Co., plant addition, St. Louis, 239 tons to Structural Steel Co., St. Louis, formerly Kaysing Iron & Foundry Co.

Aurebach & Co. theatre, store and office building, Chicago, 203 tons to Kryl Bridge & Crane Co., Chicago.

Robert A. Johnston Co. candy plant, Milwaukee, 200 tons to A. F. Wagner Architectural Iron Works, Milwaukee.

Great Falls Iron Works, foundry building, Great Falls, Mont., 124 tons to Minneapolis Steel & Machinery Co.

Maryland Refining Co., supports for oil stills, Ponca City, Okla., 107 tons to unknown fabricator.

Standard Steel Corporation shop, Milwaukee, 100 tons to North Western Bridge & Iron Co., Milwaukee.

Huffman Motor Co., Elkhart, Ind., 100 tons to Elkhart Bridge & Iron Co.

Current inquiries include:

Studebaker Corporation, assembly plant, South Bend, Ind., 1500 tons.

St. Louis Smelting & Refining Co., Collinsville, Ill., 400 tons.

Steel & Tube Co., Bottom House and Mixer Building, Indiana Harbor, Ind., 370 tons.

Hubbard & Co., plant, Chicago, 380 tons.

Interstate Milk Products Co., plant, Sparta, Wis., 100 tons.

The mill quotation is 2.45c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote $3.47 for materials out of warehouse.

Wire Products.—Operation is running behind specifications and producers are finding it increasingly difficult to entertain new business. There is a particularly heavy demand from the jobbers who are apparently unable to accumulate any stock ahead. Shipments are still being delayed by a scarcity of railroad equipment, although this condition is not as acute as it was a few weeks ago. It is anticipated that the demand will be even heavier this fall than at the present time. For mill prices see finished iron and steel f.o.b. Pittsburgh, page 749.

Rails and Track Supplies.—The leading interest has closed contracts with mines for about 2500 tons of light rails. There is a fair demand for track fastenings and small orders for standard rails continue to come from industrial lines.

Standard railroad spikes, 3.35c., Pittsburgh. Track bolts with square nuts, 4.35c., Pittsburgh. Steel tie plates and iron angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 2.90c., f.o.b. makers' mills. Light rails, 2.45c., f.o.b. makers' mills, with usual extras.

Old Material.—Outside of the sale of a few thousand tons of heavy melting steel to a large consumer, the market has been inactive. Prices continue rather weak with many of them even lower than a week ago. The fear of labor difficulties in the steel mills continues a depressing factor. Of the 16,000 tons of shell forgings recently offered by the Ordnance Department, 6000 tons have been disposed of at $20.26 and $20.61 per gross ton, all lower bids having ben rejected. The Santa Fe is advertising 1300 tons, the Friscoe and the Missouri, Kansas & Texas 1000 tons each, the Great Northern 2500 tons, the St. Paul 1200 tons, the Wabash 900 tons and the Pennsylvania Lines East 700 tons. The Belt Railway of Chicago, the Elgin, Joliet & Eastern, the Pierre Marquette, the Kansas City Southern, the Soo Line, the Erie and the Baltimore & Ohio have issued smaller lists.

We quote delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$25.00 to $26.00
Relaying rails	35.00 to 45.00
Carwheels	24.00 to 25.00
Steel rails, rerolling	26.50 to 27.50
Steel rails less than 3 ft.	22.50 to 23.00
Heavy melting steel	18.50 to 19.50
Frogs, switches and guards, cut apart	18.50 to 19.50
Shoveling steel	18.50 to 19.00
Per Net Ton	
Iron angles and splice bars	$23.50 to $24.50
Steel angle bars	19.50 to 20.00
Iron arch bars and transoms	24.00 to 25.00
Iron car axles	28.00 to 29.00
Steel car axles	25.50 to 26.00
No. 1 busheling	16.00 to 16.50
No. 2 busheling	11.50 to 12.00
Cut forge	18.00 to 18.50
Pipes and flues	15.25 to 15.75
No. 1 railroad wrought	19.00 to 20.00
No. 2 railroad wrought	18.00 to 18.50
Steel knuckles and couplers	19.50 to 20.00
Coil springs	21.00 to 21.50
No. 1 cast	24.00 to 25.00
Boiler punchings	22.50 to 23.00
Locomotive tires, smooth	21.00 to 21.50
Machine-shop turnings	9.00 to 9.50
Cast borings	11.50 to 12.50
Stove plate and light cast	20.50 to 22.50
Grate bars	20.00 to 20.50
Brake shoes	18.50 to 19.50
Railroad malleable	18.50 to 19.50
Agricultural malleable	18.50 to 19.50
Country mixed	14.50 to 15.50

French Iron and Steel Prices

Some advances were made in iron and steel prices in France in mid-August, according to *L'Usine* of Aug. 14. The market strength is attributed in part to the labor factor. Luxemburg iron was put up to 225 fr. per ton ($27.10 per metric ton of 2204 lb. and exchange at 8.3 fr. for $1), free at the railroad station at point of delivery, against 220 fr. ($26.50) formerly holding. Belgian pig iron was raised to 230 fr. ($27.80) delivered at consumers' works, against 225 fr. ($27.10). Hematite iron, constantly sought for and extremely scarce, was advanced from 375 to 380 fr., ($45.20 to $45.80), but quotations of 400 fr. ($48.20) are cited and 410 fr. ($49.50) demanded for immediate delivery.

Business in merchant iron bars is done on the basis of 525 fr. ($2.85 per 100 lb.) per ton, against 500 fr. two weeks previous; some works have refused to book such business. The market for steel products in general is reported as decidedly firm because of the shortage of raw materials, their excessive cost and labor conditions. An advance of 25 fr. ($3) per ton has been made and the market on heavier rolled products is established at 550 fr. (3c. per lb.) per ton.

Philadelphia

PHILADELPHIA, Sept. 9.

Consumers of pig iron and steel products are evidently perplexed by the uncertainties of the labor situation, this being reflected in a falling off in new business during the past week. The steel companies do not seem to take seriously the possibility of a strike and they believe that the whole matter will be put off pending the conference called by President Wilson for early in October.

On the whole, the position of the steel mills is fairly satisfactory, some of them having business enough in certain lines to maintain operations over the remainder of the year. This is particularly true as regards bars and sheets. One mill has sold almost its whole output of plates for the rest of the year, its capacity being about 10,000 tons a month.

Foundry pig iron is firm, with a tendency toward higher prices. Sales of iron analyzing 2.25 to 2.75 per cent silicon have been made for delivery into next year at $31, furnace.

Pig Iron.—Inquiry for foundry pig iron has fallen off somewhat during the past week. For steel-making iron, there is no demand whatever. Although prices of foundry iron show a stiffening tendency, there are no indications of sharp advances in prices over the remainder of this year. There are fairly large stocks of iron on hand and a number of merchant furnaces are ready to blow in the moment that demand and prices warrant it. Therefore, any inclination to advance prices is held in check. Some consumers appear anxious to cover into next year, but there is some hesitancy about accepting the higher prices which furnaces are asking for first quarter delivery. A few sales for first quarter have been made by one interest at $31, furnace, for iron analyzing 2.25 to 2.75 per cent silicon. Most of the furnacemen, however, decline to accept any business for next year because of uncertainty as to costs of coke and ore. Very few contracts for coke have been made by the Eastern furnaces for first half. While they may pay higher prices by waiting, they evidently prefer to run that chance than to cover now. There has been a good demand for forge iron and several thousand tons have been sold within the past week to two Eastern consumers. The minimum price obtained on these sales is reported to be equivalent to $27.10, delivered Philadelphia.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace:

Eastern Penna. No. 2 X, 2.25 to 2.75 sil.	$30.60 to $31.10
Eastern Penna. No. 2 plain, 1.75 to 2.25 sil.	29.60 to 30.10
Virginia No. 2 X, 2.25 to 2.75 sil.	33.10
Virginia No. 2 plain, 1.75 to 2.25 sil.	32.10
Basic	26.60 to 27.10
Gray forge	27.10
Malleable	30.10
Standard low phosphorus (f.o.b. furnace)	38.00
Copper bearing low phosphorus (f.o.b. furnace	35.00

Ferroalloys.—Following the filing of a complaint with the Federal Trade Commission by American producers of ferromanganese charging dumping of British ferromanganese in this country, the British producers are understood to have withdrawn their latest price of $95, Atlantic seaboard. The American producers assert that the British makers cabled their agents on Aug. 29, instructing them to offer the British alloy here at $95, but some of these American agents state that they have taken no business at that price. Chairman Colver of the Federal Trade Commission is expected to set a date this week for a hearing of the complaint. Demand for ferromanganese continues fairly good. It is stated that a considerable part of the recent business has been taken by the agents of the British makers. The Midvale Steel & Ordnance Co. is in the market for about 2000 tons of 80 per cent alloy for delivery over the remainder of this year and up to April of next year. This company recently arranged with the Lavino Furnace Co. for the conversion of manganese ore into 5000 tons of ferromanganese. Spiegeleisen is not in much demand and the asking price for the 18 to 22 per cent is nominally $35, furnace. Domestic producers of ferromanganese are quoting $110, delivered, but would probably shade this price to meet British prices of $95 or $100, seaboard.

Coke.—Blast-furnace coke is firm. We note a sale of 100 carloads for prompt delivery at $5, Connellsville. Foundry coke is likewise firm at $5.75 and $6 a ton, the latter price ruling on a majority of transactions.

Semi-Finished Steel.—There is no very large demand for billets and slabs, which is no disappointment to some of the Eastern producers, as they have no steel to spare. A fair inquiry for small lots of forging billets is noted, and for prompt delivery as high as $54, Pittsburgh, has been obtained. We quote open-hearth rerolling billets at $42.50, forging billets at $55 and slabs at $45, all delivered Philadelphia.

Plates.—Some of the Pacific Coast shipyards have been endeavoring to place orders of from 500 to 1000 tons with Eastern mills at 2.65c., mill, for shipment to the Coast by rail and water. There is now a water rate of about 80c. per 100 lb. from Philadelphia to San Francisco or other Coast ports, including Panama Canal charges. Whether the orders have been placed on this basis has not been made known, but one or two mills have turned down the business, as they are not accepting anything less than 2.65c., Pittsburgh. Concessions on plates are still to be had, however, and quotations of 2.50c. and 2.55c., Pittsburgh, are occasionally noted. The situation on plates has taken on a better appearance in the last few weeks due to the placing of export orders and railroad orders. It is estimated that about 35,000 to 40,000 tons of plates for export have been booked in this market within the past three weeks and about 20,000 tons of plates for railroad car repairs. We quote sheared plates, ¼ in. and heavier, at 2.745c., Philadelphia.

Structural Material.—The Standard Oil Co. will build a $2,000,000 office building in Philadelphia for the general offices of its subsidiary, the Atlantic Refining Co. The steel requirements have not been made known. Several small building projects previously reported are still pending, and the market is by no means active. However, mills rolling shapes report a steadily improving demand, though none of them is up to capacity. We quote plain material at 2.695c., Philadelphia.

Old Material.—The scrap market shows no activity. Consumers are almost out of the market. The market has a fairly firm undertone, however, due to the expectations of dealers that better conditions will soon return and they are not willing to sell at prices which the mills would now pay. No. 1 heavy melting steel is slightly weaker and is quotable at $18.50 to $19.50. We quote, delivered at consumers' works, eastern Pennsylvania:

No. 1 heavy melting steel	$18.50 to $19.50
Steel rails, rerolling	25.00 to 26.00
No. 1 low phosphorus, heavy, 0.04 and under	25.00 to 26.00
Carwheels	24.50 to 26.00
No. 1 railroad wrought	26.50 to 27.50
No. 1 yard wrought	23.00 to 24.00
No. 1 forge fire	14.00 to 15.00
Bundled skeleton	15.00 to 16.00
No. 1 busheling	16.00 to 17.00
No. 2 busheling	13.00 to 14.00
Turnings (short shoveling grade for blast furnace use)	14.50 to 15.00
Mixed borings and turnings (for blast furnace use)	13.00 to 14.00
Machine-shop turnings (for rolling mill and steel works use)	15.00 to 15.50
Heavy axle turnings (or equivalent)	16.50 to 17.00
Cast borings (clean)	15.00 to 16.00
No. 1 cast	25.00 to 26.00
Railroad grate bars	21.00 to 22.00
Stove plate	20.50 to 21.50
Railroad malleable	20.00 to 21.00
Wrought iron and soft steel pipes and tubes (new specifications)	19.50 to 20.50
Ungraded pipe	15.00 to 16.00

Bars.—The continuous demand for steel bars is a feature of the steel situation. One company which recently raised its base price to 2.50c., Pittsburgh, re-

ports taking quite a little business at this price, which is an indication of the generally sold-up condition of those mills which are quoting 2.35c. Demand for bar iron is fairly satisfactory. Two of the leading Eastern producers continue out of the market, as their plants are closed by strikes. We quote soft steel bars at 2.595c. and bar iron at 2.745c., Philadelphia, with double refined bar iron 1c. per lb. higher.

Sheets.—Demand for sheets continues active. One local mill rolling blue annealed sheets only is practically sold up for the rest of the year. We quote No. 10 blue annealed at 3.795c.; No. 28 black at 4.595c. and No. 28 galvanized at 5.945c., all delivered Philadelphia.

Birmingham

BIRMINGHAM, ALA., Sept. 8.

Pig Iron.—The first September week did not bring a large amount of new business to Southern iron producers. Consumers taking this metal seem fairly well supplied for the remainder of the year, and books for 1920 are not opened. The situation is regarded as the healthiest in years. Inquiry for export metal for prompt shipment does not result in orders because furnaces have no prompt iron. Stocks accumulated in August, one interest piling 3600 tons on a two-furnace make and another 12,000 on a four-furnace make. This is due to car shortage, orders calling for depletion rather than accretion. The market status as to price is best told by these two sales of prompt iron: one lot of 500 tons of No. 4 at $27, the equivalent of a $28 basis, and 500 tons of 3.25 to 3.75 silicon at $32.75, the equivalent of a $27.75 basis. These sales were by the same company. One still hears of $27.50 iron, but in a vague way that suggests the recent past when new furnaces were just coming in rather than now. No sellers are pushing business. A company making 17,000 tons sold 23,000 in August. One making 20,000 tons sold 13,000.

Furnace operations are improving, due to the greater steadiness of labor, although one concern has practically despaired of putting in an additional furnace on account of labor shortage. The Woodward Iron Co. is understood to be preparing its fifth and last stack for operation. With 26 active stacks the output of September will be the largest in many months. Raw material supply is superior to that of this time a year ago. Some export iron is being shipped on old orders. We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

Foundry, silicon 1.75 to 2.25	$27.75
Basic	26.75

Coal and Coke.—The Alabama General Assembly finally put through a tax levy of 2c. a ton on coal mined and 3c. a ton on ore, a combined special tax of $560,000 per annum on the mineral belt. Good foundry coke is firm at $9.50 for spot. Contracts run for shorter periods than heretofore, few extending beyond Jan. 1. The output is increasing.

Cast-Iron Pipe.—Houston is inquiring for a large quantity of 12 and 24-in. pipe for oil wells and North Carolina cities are placing orders for lots of 6-in. water mains. Supreme effort is being made to increase operations at larger plants, a process rendered slow by breaking in green labor. Municipalities are no longer holding back on account of price. The outlook is excellent. Sanitary shops are enjoying a period of genuine prosperity.

Old Material.—The scrap market is in better form. Pipe shops are taking a lot of material and heavy steel is moving in quantities at the new higher margins. Steel mill operations are near maximum and they take a quantity of material. We quote per gross ton, f.o.b. Birmingham district yards, prices to consumers, as follows:

Steel rails	$18.00 to $19.00
No. 1 heavy steel	17.00 to 18.00
Cast iron borings	10.00 to 10.50
Machine shop turnings	10.00 to 10.50
Stove plate	20.00 to 21.00
No. 1 cast	23.00 to 24.00
Carwheels	23.00 to 24.00
Tramcar wheels	22.50 to 23.00
Steel axles	25.00 to 26.00
No. 1 wrought	18.00 to 19.00

Buffalo

BUFFALO, Sept. 8.

Pig Iron.—There is a little more inclination on the part of furnaces to sell for first quarter and first half of next year than was manifest a week ago; but as a rule they are not pushing sales for delivery as far forward as that, preferring to wait until that period is closer at hand and more accurate estimates can be made as to their costs of manufacture at that time. One of the large producers of the district which is sold up for 1919 has not yet started to sell any iron for 1920 and states it will not do so soon. Another interest which is practically sold up for last half and is selling only in small lots to old customers has taken on an aggregate of 7000 tons, foundry grades, one-half to two-thirds of which is for first quarter delivery. Still another producer has taken on moderate tonnages, foundry and malleable, for first quarter at present prices. There is a steady demand for both last and first quarter and there is no doubt that if furnaces were more certain as to production costs a good buying movement would ensue. Prices remain unchanged from last week and we quote as follows f.o.b. furnace, Buffalo:

No. 1 foundry, 2.75 to 3.25 silicon	$30.00
No. 2 X, 2.25 to 2.75 silicon	$29.00 to 29.50
No. 2 plain foundry, 1.75 to 2.25 silicon	28.00 to 28.50
Gray forge	27.50 to 28.00
Malleable, silicon not over 2.25	29.00
Basic	26.75
Basic, 1 to 1½ per cent manganese	27.25
Basic, 1½ to 2½ per cent manganese	27.75
Bessemer	30.00
Lake Superor charcoal, regular grades, f.o.b. Buffalo	34.85

Finished Iron and Steel.—The sold-up condition of finished products, particularly steel bars, sheets and wire products, is the notable feature of the market this week. The steel bar supply is insufficient to meet the demand and prices are very strong. Indications are that without doubt prices for first quarter delivery will be advanced; in fact, selling agencies state that some of the smaller mills are this week quoting 2.65c. to 2.85c. for steel bars for prompt shipment. The larger mills are not taking on new bar business; confining sales to old customers and applying production on existing contracts. The demand for shafting is improving.

Prices f.o.b. Buffalo are as follows: Steel bars, 3.40½c.; iron bars, 4.10½c.; shapes, 3.50½c.; plates, 3.70½c.; No. 10 blue annealed sheets, 4.60½c.; No. 28 black, 5.65½c.; No. 28 galvanized sheets, 7.00½c. For "store door delivery" add 0.04½c. to each commodity.

Old Material.—The market shows strength and prices are firm and show advances in some instances, although the aggregate of buying has not been large. A good many local users as well as those outside the district are continuing to use material from stocks on hand, to a considerable extent, instead of taking on new supplies. Low phosphorus is $1 to $1.50 per ton higher than shown in last report; also bundled sheet stamping; steel axles and iron axles have advanced $2 per ton; iron rails, $1 per ton and No. 1 busheling, $1.50 per ton. Wrought pipe, stove plate, locomotive grate bars, machine-shop turnings and cast-iron borings have also shown advances. Special scrap materials used in steel casting plants engaged in railroad work show lessening of demand, but otherwise the market is in a very promising condition, from the dealers' viewpoint. We quote dealers' asking prices, per gross ton, f.o.b. Buffalo as follows:

Heavy melting steel, regular grades	$19.00 to $20.00
Low phosphorus, 0.04 and under	23.50 to 24.00
No. 1 railroad wrought	23.00 to 23.50
No. 1 machinery casts	24.50 to 25.50
Iron axles	28.00 to 29.00
Steel axles	28.00 to 29.00
Carwheels	22.50 to 23.50
Railroad malleable	19.00 to 20.00
Machine-shop turnings	12.00 to 12.50
Heavy axle turnings	16.00 to 17.00
Clean cast borings	13.50 to 14.00
Iron rails	24.00 to 25.00
Locomotive grate bars	20.00 to 20.50
Stove plate	22.00 to 22.50
Wrought pipe	17.50 to 18.00
No. 1 busheling	16.50 to 17.50
Bundled sheet stamping	14.50 to 15.00

New York

NEW YORK, Sept. 9.

Pig Iron.—Sales for delivery in 1920 continue at a moderate rate. In the case of one seller who has sold 10,000 tons for delivery at a price slightly higher than for this year, no further selling is to be done for the present. While some furnaces are still asking $2 higher for 1920 than for this year, there is a tendency to recede to a price only $1 higher. An inquiry for 1000 tons of foundry iron for New England delivery this year is one of the evidences of the increasing melt of many foundries. An inquiry has appeared for 5000 tons of various grades for Holland for next year. Sales of moderate tonnages are being made for Japan, but the present condition of the exchange market makes it impossible to ship to England or France. The low phosphorus market is exceedingly dull and basic shows a tendency toward weakness. On the whole, the foundry and malleable iron markets are very strong and furnaces are showing an unwillingness in some cases to allow shipments to be extended into next year, when on account of strikes and other reasons foundries are not able to receive shipments promptly. We quote tidewater delivery for the remainder of this year as follows:

No. 1 foundry, silicon, 2.75 to 3.25	$30.80 to $32.80
No. 2 X, silicon, 2.25 to 2.75	30.80 to 31.80
No. 2 plain, silicon, 1.75 to 2.25	29.80 to 30.80
No. 2 X, Virginia, silicon, 2.25 to 2.75	32.40 to 35.40

Ferroalloys.—Whether or not the movement inaugurated by certain domestic producers of ferromanganese to invoke the power of the anti-dumping law against British producers has had any effect or not, it is a fact that so far as ascertainable no British producers are now quoting less than $105, seaboard, for British standard alloy. In contrast with this American producers are apparently asking $110, delivered, which is virtually equivalent to the British price. It is acknowledged that in the past week a considerable proportion of the 5000 to 7000 tons which was reported to be before the market a week ago has been sold and most of it taken by British producers. How much of this was sold at $95, seaboard, is not known, but it is believed that this was the price at which a considerable tonnage was accepted. At present the situation is mixed, some English producers having a certain amount of alloy available for delivery in 1919 at $105, seaboard, another having some available at this price for delivery in 1920 but no more in 1919, and some having withdrawn from the market temporarily. It is the opinion of certain dealers that ferromanganese for early delivery is scarce. Production in August, according to blast furnace reports in THE IRON AGE, was not heavy. It was 9268 gross tons with the spiegeleisen output 8151 tons. Demand for spiegeleisen is very light and quotations are nominally strong at $35, furnace, for the 18 to 22 per cent alloy. Demand for ferrosilicon, 50 per cent, is not heavy and quotations range anywhere from $70 to $100 per ton, delivered, depending upon the seller, the amount under contract and the delivery.

Finished Iron and Steel.—With the exception of plates, shapes and rails, steel companies are mostly well sold up for the remainder of this year and are not anxious for more business. The demand for wire products, sheets, bars, tin plate and pipe both for domestic and export trade is equal to or beyond the capacity of the mills this year, and they are not willing to enter into commitments for next year. Some companies are adopting a conservative selling policy even for fourth quarter. One leading independent, which needs plate tonnage badly, turned down a contract which provided for deliveries running through the fourth quarter. Jobbers have asked for fourth quarter contracts also, and have in several instances been turned down if they have not fully specified their third quarter contracts. Except on plates, prices are firm and important advances might take place if it were not for fear of complications with labor which might ensue. Most of the makers of plates are quoting 2.65c., Pittsburgh, on domestic business, but 2.75c., New York, can be obtained without difficulty on any export tonnage. The structural steel market is fairly active, but the average of new bookings is possibly lower than in July and August. It is expected, however, that many projects will come into the market within the next 30 or 60 days in preparation for commencement of actual building operations by spring. New bids have been opened by the Navy Department on the dirigible hangar to be built at Lakehurst, N. J., requiring about 8000 tons. For the entire job the McClintic-Marshall Co. was low bidder, its price being $2,422,000, but on the steel alone the Bethlehem Steel Bridge Corporation, with a price of $1,283,000, was low bidder. Lettings during the past week include the following:

Paper mill for the Manistique Pulp & Paper Co., Manistique, Mich., 400 tons, to the Pittsburgh Bridge Co.

Mill building for the Germania Mills, Holyoke, Mass., 500 tons, to the American Bridge Co.

Bridge for the Boston & Maine Railroad at Haverhill, Mass., 1800 tons, to the Bethlehem Steel Bridge Corporation.

We quote as follows for mill shipments: Bar iron, refined grade, 2.77c.; double refined bar iron, 3.77c.; soft steel bars, 2.62c.; shapes, 2.72c.; plates, 2.92c.; all New York

Cast-Iron Pipe.—The cast-iron pipe market shows distinct improvement as compared with a few weeks ago. No large contracts are being made, but many sales of moderate tonnages are effected and prices are being maintained, although it is impossible to say what prices would be named if any considerable municipal business developed. We quote 6-in. and heavier, $54.30; 4-in., $57.30, with $2 additional for class A and gas pipe.

Old Material.—The market shows a weaker tendency since dealers have loaded cars which they are willing to dispose of in some instances at lower figures than those prevailing a week ago. The weakness is merely because of the present stagnation of the scrap business, the prevailing opinion being that those who are willing to wait will realize higher prices in the future. One dealer reports a difficulty in securing turnings, caused by the active demand for borings and turnings by blast furnaces, more of which are continually going into blast. Prices which dealers and brokers are paying, New York, per gross ton, follow:

Steel rails, 3 ft. or under (or equivalent)	$15.50 to $16.00
Heavy melting steel	14.50 to 15.00
Rerolling rails	21.00 to 22.00
Relaying rails, nominal	41.00 to 42.00
Steel car axles	25.00 to 26.00
Iron car axles	32.00 to 33.00
No. 1 railroad wrought	23.50 to 24.00
Wrought iron track	18.00 to 19.00
Forge fire	10.50 to 11.00
No. 1 yard wrought, long	18.50 to 19.00
Light iron	6.00 to 7.00
Cast borings (clean)	11.00 to 11.50
Machine shop turnings	11.00 to 11.50
Mixed borings and turnings	9.50 to 10.00
Iron and steel pipe (1 in. min. diam., not under 2 ft. long)	16.00 to 16.50
Stove plate	17.50 to 18.00
Locomotive grate bars	18.00 to 18.50
Malleable cast (railroad)	15.50 to 16.00
Old carwheels	21.50 to 22.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery, cast	$24.50 to 25.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	23.50 to 24.00
No. 1 heavy cast, not cupola size	16.00 to 16.50
No. 2 cast (radiators, cast boilers etc.)	17.50 to 18.00

St. Louis

ST. LOUIS, Sept. 8.

Pig Iron.—While the foundries continue to indicate by their demand for pig iron that they are busy, there is no immediate indication that the big consumers of basic are inclined to show any marked activity. In consequence, the buying now being done is still of small lots for the rest of the year at steadily firmer prices with increasing indication of early advances. In fact, some advances are already reported, but these seem to have been as much to check demand until cost of production is more definitely settled than for anything else. The buying is in lots ranging down from 500 tons. No orders are being taken for first quarter.

Coke.—The activity of the gray iron and malleable foundries is resulting in pressure for the delivery of

coke on contract, but no new transactions are being entered into, nor are foundries trying to place any 1920 orders.

Finished Iron and Steel.—The demand for finished products is good and the aggregate is increasing, though no notable individual contracts are being made. Deliveries are not so good as desired, but are not so extended as to make any serious trouble for the users. Movement out of warehouse is free with the volume fully up to present capacity to handle. For stock out of warehouse we quote as follows:

Soft steel bars, 3.44c.; iron bars, 3.44c.; structural material, 3.54c.; tank plates, 3.74c.; No. 8 sheets, 4.59c.; No. 10 blue annealed sheets, 4.64c.; No. 28 black sheets, 5.69c.; No. 28 galvanized sheets, black sheet gage, 7.04c.

Old Material.—The scrap market seemed a little weaker during the week, with some recessions in the trading among the dealers. There is no speculative disposition of moment apparent in the market, and while dealers are inclined to hold on to what they have for firmer prices, they are not disposed to buy speculatively to any great extent. Some lists out from the railroads and local industries went at fair prices, all things considered. For old material we quote dealers' prices, f.o.b. customers' work, St. Louis industrial district, as follows:

Per Gross Ton

Old iron rails	$24.50 to $25.00
Old steel rails, rerolling	28.00 to 28.50
Old steel rails, less than 3 ft.	23.00 to 23.50
Relaying rails, standard sections, subject to inspection	38.00 to 45.00
Old carwheels	25.00 to 25.50
No. 1 railroad heavy melting steel	20.00 to 20.50
Heavy shoveling steel	18.00 to 18.50
Ordinary shoveling steel	17.00 to 17.50
Frogs, switches and guards, cut apart	20.00 to 20.50
Ordinary bundled sheets	10.00 to 10.50
Heavy axle and tire turnings	12.50 to 13.00

Per Net Ton

Iron angle bars	$21.00 to $21.50
Steel angle bars	19.00 to 19.50
Iron car axles	28.00 to 28.50
Steel car axles	26.00 to 26.50
Wrought arch bars and transoms	23.00 to 23.50
No. 1 railroad wrought	18.00 to 18.50
No. 2 railroad wrought	17.00 to 17.50
Railroad springs	22.50 to 23.00
Steel couplers and knuckles	20.00 to 20.50
Locomotive tires, 42 in. and over, smooth inside	20.50 to 21.00
No. 1 dealers' forge	18.50 to 19.00
Cast iron borings	13.50 to 14.00
No. 1 busheling	15.00 to 15.50
No. 1 boiler, cut to sheets and rings	14.50 to 15.00
No. 1 railroad cast	23.00 to 23.50
Stove plate and light cast	18.00 to 18.50
Railroad malleable	20.00 to 20.50
Agricultural malleable	18.50 to 19.00
Pipes and flues	15.50 to 16.00
Heavy railroad sheet and tank	14.50 to 15.00
Railroad grate bars	19.00 to 19.50
Machine shop turnings	11.00 to 11.50
Country mixed	15.00 to 15.50
Uncut railroad mixed	15.00 to 15.50
Horseshoes	19.00 to 19.50

Boston

BOSTON, Sept. 9.

Pig Iron.—In the opinion of the sellers the present is a lull before a heavy buying movement. Those who have been calling on New England foundrymen report unusual activity and believe that more iron is being melted to-day than at any time since the armistice. For instance, one foundry which laid off and shut down in the spring now is running full and cannot get enough molders, many have doubled their normal melts, several are working nights as well as days, many are turning away orders for castings. In addition, normal export business has not yet set in. One producer has officially entered the market for next year and two more are reported to have done so. In some cases, no change has been made in quotations from this year for 1920 delivery. Of 1000 tons sold last week by one firm 600 tons of both 2.25 to 2.75 and 2.75 to 3.25 iron went to one textile interest for this year's delivery, this tonnage probably representing half of what he purchased altogether. Most sales are still in lots from 100 to 200 tons. One seller booked for this year 50 tons of 2.25 to 2.75 iron and 100 tons of 2.75 to 3.25. Buffalo iron was sold recently as follows: 300 tons of 2.25 to 2.75 iron at $29.50, furnace, and 50 tons of 2.75 to 3.25 iron at $31.25, furnace. An inquiry for 500 tons of foundry iron for next year received consideration for a few days, but was finally turned down by the furnace, which was unwilling at this time to take 1920 business. On coke the local interest is quoting $10.40, delivered, on old contracts, $10.90 for new business for the rest of the year and $11.90 for first quarter. However, business for the latter is being taken reluctantly. The interest refuses to quote for second quarter because of the demands of coal miners for a 6-hr. day after April 1, which, if granted, will raise the costs of making coke.

Eastern Pa., No. 2 X (silicon 2.25 to 2.75)	$32.90
Eastern Pa., No. 2 plain (silicon 1.75 to 2.25)	31.90
Buffalo No. 2 X (silicon 2.25 to 2.75)	32.90
Buffalo No. 2 plain (silicon 1.75 to 2.25)	31.90
Virginia No. 2 X (silicon 2.25 to 2.75)	35.70
Virginia No. 2 plain	34.70

Warehouse Business.—Jobbers report business as spotty, though 25 per cent better than during the slump of the first half of this year. Volume of sales is far short of that during the war, however. A leading interest has just added 50 per cent of mill extras to his out of warehouse extras on cold finished steel, claiming that he has found he has not been making legitimate profit on certain small sizes which average two years in storage and which are difficult to handle because of their lack of rigidity and the necessity of bundling. Freight from Pittsburgh on carload lots to Boston is 30c. per 100 lb., less than carloads taking a 35c. rate. Jobbers are aiming to realize a warehouse charge of 1c. a pound. Prices per lb. out of warehouse are as follows:

Steel bars, 3.40c.; cold rolled steel, rounds, 5c., squares, hexagons and flats, 5.50c., base; structural steel, 3.50c.; tire steel, 4.00 to 4.50c.; spring steel, open hearth, 8.00c., special, 12.00c.; toe calk steel, 5.50c.; steel hoops, 4.70c.; steel bands, 4.60c.; bar iron, 3.40c.; No. 10 blue annealed sheets, 4.85c.; No. 28 black sheets, 6.00c.; No. 28 galvanized sheets, 7.25c.; plates, 3.70c.

Old Material.—Prices are becoming more and more nominal as the period lengthens since any marked sales were made. Dealers are maintaining a hopeful waiting policy and refuse to part with their scrap at low prices. Especially for cast scrap, they foresee a big demand in the near future because of the unusual activity of jobbing foundries and stove manufacturers. The heavy demand for borings and turnings by blast furnaces is keeping the prices up at a time when rolling mills are using less. The scarcity of stove plate is another market feature causing much comment. Dealers believe that the threat of strikes among the steel workers has given the consumers of steel scrap a chance to bear the market. Dealers believe that but for labor threats they would to-day be selling their steel delivered to Pittsburgh at $25. An interesting feature in the local market was the recent shipping away of cast scrap from Worcester, it usually being a receiving point for all the surplus of this grade. Unusual interest focused recently upon a sale of 3500 tons of Government heavy melting steel, seven bidders having submitted figures, Perry, Buxton, Doane Co., South Boston, having been awarded the bulk of it for $19.06 per gross ton. The Charlestown Navy Yard sold 600 tons of scrap, consisting of heavy melting steel, forge, flashings, pipe, etc., Tuesday of this week. Dealers' buying prices, delivered to their yards in Boston and vicinity, follow:

No. 1 heavy melting steel	$15.00 to $16.00
No. 1 railroad wrought	19.50 to 20.00
No. 1 yard wrought	18.00 to 19.00
Wrought pipe (1 in. in diameter, over 2 ft. long)	15.50 to 16.00
Machine shop turnings	10.50 to 11.00
Cast iron borings	11.00 to 11.50
Heavy axle turnings	11.50 to 12.00
Blast furnace borings and turnings	9.50 to 10.00
Forge scrap	10.50 to 11.00
Bundled skeleton	10.50 to 11.00
Steel car axles	22.00 to 23.00
Carwheels	24.50 to 25.00
Machinery cast	24.50 to 25.50
No. 2 cast	22.00 to 23.00
Stove plate	19.50 to 20.00
Railroad malleable	17.00 to 17.50
Rerolling rails	20.00 to 20.50

Cincinnati

CINCINNATI, Sept. 9.

Pig Iron.—Southern furnace operators still refuse to open their books for next year's shipment, although it is generally believed that they will make some move within a very short time. Nearly all furnaces in the South are now quoting $28 and higher, Birmingham base, for shipment through the remainder of the year. A local stove maker bought 1000 tons of high silicon and high phosphorus iron for nearby shipment. Other sales of Southern iron to stove foundries in Indiana and Ohio are reported, but the total tonnage placed last week of both Southern and Northern foundry iron was considerably below the preceding week. A limited tonnage of Northern iron has been sold for first quarter shipment at $28.75 and $29, Ironton, but the furnaces are loath to take on any more business for that delivery. It is rumored that some of the Lake furnaces have recently booked a few orders in central Ohio and Michigan as low as $26.75, furnace, for first half shipment. As far as can be ascertained they have now withdrawn this price. There is not much foundry iron in southern Ohio to be had for this year's shipment, and it is also reported that the majority of Southern producers have all the business they can take on for that delivery. Virginia furnaces occasionally sell some spot iron and are obtaining $29.75 to $30, at furnace, for silicon ranging from 1.75 to 2.25. The car supply is a trifle better, although it is feared that the relief is only temporary. No inquiries for basic have been issued lately by melters in this territory.

Based on freight rates of $3.60 from Birmingham and $1.80 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, silicon, 1.75 to 2.25 (base price)	$31.35
Southern coke, silicon, 2.25 to 2.75 (No. 2 soft)	32.35
Ohio silvery, 8 per cent silicon	42 05
Southern Ohio coke, silicon, 1.75 to 2.25 (No. 2)	28.80
Basic Northern	26.55
Standard Southern carwheel	51.60
Malleable	29.05
Lake Superior charcoal	35.35

Coke.—The Connellsville situation shows considerable strength as far as prices on prompt shipment coke are concerned, furnace coke bringing from $4.75 to $5 per net ton at oven for nearby shipment. Foundry is unchanged around $6. Not much future contracting is being done as oven operators are not yet able to figure out very closely what their future production costs will be. Wise County furnace coke is quoted at $6 to $6.50 per net ton at oven and foundry from $8 to $8.50. Some foundry coke business for spot shipment is reported, but the tonnage is rather limited. New River foundry is stationary at $9 to $9.50. Pocahontas foundry is quoted at $8, but no sales to consumers in this vicinity have been recently reported.

Finished Material.—With the exception of bars, the mills are now making shipments in fairly good time. The average necessary for getting cars through, after being specified, is from four to five weeks, which is a considerable improvement over a few months ago. Both black and galvanized sheets are getting scarcer, and in some instances a premium has been obtained on galvanized sheets over the regular mill price, which is 5.70c., Pittsburgh, for No. 28. Black sheets are quoted at 4.35c. for No. 28 base, with a freight rate of 23c. per 100 lb. to Cincinnati. Jobbers report an improved demand for stove bolts, but the call for machine bolts and screws has fallen off a trifle. Wire nails and barbed wire are moving quite freely.

The following are present local jobbers' prices: Steel and iron bars, 3.33c. base; bands, 4.03c. base; structural shapes, 3.43c. base; plates, ¼-in. and heavier, 3.36c. base; No. 10 blue annealed sheets, 4.53c.; wire nails, $4.00 per keg, base; machine bolts, smaller sizes, 50 and 5 per cent off list; larger sizes, 40 and 5 per cent. Semi-finished nuts, 9/16-in. and smaller, 75 and 10 per cent off list; steel rivets, 60 per cent off; wood screws, 80 and 10 per cent off, and coach screws, 50 and 10 per cent off list. Cold-rolled shafting, 5c. per lb. base.

Fluorspar.—There is no new demand for flourspar, but an improvement in the car supply enables that due on contracts to be moved promptly. The price on washed gravel fluorspar is unchanged at $25 per ton at point of shipment.

High-Speed Steel.—Sales representatives of leading makers of high-speed steel are still quoting $1.50 per lb. However, some is being sold in this market as low as $1.35. Business is only fairly good, as no one is stocking up.

Old Material.—With the exception of foundry material, the market is dragging. While the improvement in the demand for cupola-sized scrap is not very marked, its present strength is due to its scarcity. Outgoing shipments have been exceeding yard receipts for some time, and there does not seem to be any chance for an early improvement. The following are dealers' buying prices f.o.b. at yards, in carload lots, Southern Ohio and Cincinnati:

Per Gross Ton

Bundled sheet	$12.00 to $12.50
Old iron rails	22.50 to 23.00
Relaying rails, 50 lb. and up	40.00 to 41.00
Rerolling steel rails	20.50 to 21.00
Heavy melting steel	16.50 to 17.00
Steel rails for melting	16.50 to 17.00
Old carwheels	18.00 to 18.50
No. 1 railroad wrought	17.50 to 18.00

Per Net Ton

Cast borings	$8.00 to $8.50
Steel turnings	7.00 to 7.25
Railroad cast	20.00 to 20.50
No. 1 machinery	22.00 to 22.50
Burnt scrap	13.00 to 14.00
Iron axles	24.00 to 24.50
Locomotive tires (smooth inside)	18.00 to 18.50
Pipes and flues	13.50 to 14.00
Malleable cast	15.50 to 16.00
Railroad tank and sheet	12.00 to 12.50

Cleveland

CLEVELAND, Sept. 9.

Iron Ore.—Ore shipments from upper Lake ports during August amounted to 4,423,133 gross tons. This sharp falling off was due to the strike of the dockmen at upper Lake ports, which caused an almost total suspension of the movement for three weeks. The movement during July was 9,173,429 tons and shipments during August would probably have been about the same had it not been for the strike. The August movement shows a decrease of 5,302,198 tons as compared with the same month a year ago. The total shipments for the season till Sept. 1 fell off nearly 10,000,000 tons, as compared with last year, being 29,804,981 tons, as compared with 39,334,264 tons during the same period a year ago. Shipments are now moving forward in fair shape. The amount of ore on the lower Lake docks showed a decrease on Sept. 1 as compared with a month ago. The amount of ore on docks Sept. 1 was 6,705,062 tons as against 7,069,893 tons Aug. 1. The amount on docks Sept. 1 a year ago was 8,152,214 tons. No additional sales are reported. Ore prices, delivered f.o.b. lower Lake ports, are as follows:

Old range Bessemer, $6.45; old range non-Bessemer, $5.70; Mesaba Bessemer, $6.20; Mesaba non-Bessemer, $5.55

Pig Iron.—The inactivity in the pig iron market, which followed a good buying movement, continues. Orders and inquiries are light, although one producer reports sales aggregating 7000 tons, as compared with 2500 tons during the previous week. This iron was in foundry and malleable grades, partly for delivery this year, and the remainder for first half. Some inquiry continues to come out for iron for next year's delivery, but with one exception furnaces are declining to quote for that delivery. Furnaces are well sold up for the remainder of the year and have reduced their stock piles materially. However, there is considerable Bessemer and basic iron still in stock piles and unsold, for which furnaces are awaiting a market. The McKinney

Steel Co. blew in its Scottdale furnace, Scottdale, Pa., last week, and now has all of its eight furnaces in blast. The Struthers Furnace Co., which blew in its stack on foundry iron last week, expects to change over to basic about Nov. 1, having some old orders to fill for this grade of iron. There is considerable inquiry for Southern iron for next year, but furnaces are declining to quote for that delivery, and have little iron left to sell this year. Small lot sales are being made for the remainder of the year, the prevailing prices being $28 for 1.75 to 2.25 silicon, $29.10 for 2.25 to 2.75, and $30.25 for 2.75 to 3.25 silicon. Some silvery iron is being booked for the last quarter only for shipment from Milton furnace, which will be blown in about Oct. 1, having been out for relining. These orders are being taken at $39.50, $41, $43 and $45 for 6, 7, 8 and 9 per cent silicon, respectively, being about 75c. per ton higher for the 8 per cent grade than has been prevailing recently. Other southern Ohio silvery furnaces are still out of blast because of a strike. We quote, delivered Cleveland, as follows:

Bessemer	$29.35
Basic	25.65
Northern No. 2 foundry, silicon, 1.75 to 2.25	27.65
Southern foundry, silicon, 2.25 to 2.75	34.10
Gray forge	26.15
Ohio silvery, silicon, 8 per cent	45.40
Standard low pnos., Valley furnace	$38.00 to 40.00

Coke.—There has been a very active demand for foundry coke during the past week. Many foundries placed contracts for the first half of next year, and a fair volume of orders for prompt shipment were taken. The demand for Connellsville foundry coke for early shipment has been stimulated by the fact that shipments of Ashland, Ky., by-product coke have become very slow, and there is uncertainty as to how much of this coke consumers in this territory will be able to secure on their contracts. The market is very firm at $6.50 per net ton at oven for best makes of Connellsville foundry coke for both early shipment and first-half contracts. However, one sale of 20 cars has been made at $7.

Finished Iron and Steel.—Specifications for steel bars are very heavy and many new inquiries are coming out, but some of the mills are sold up so far ahead that they are declining to take additional orders except from their regular trade and some of this tonnage from regular customers is being booked without delivery promises. Deliveries are becoming slower and some consumers are not getting bar shipments as fast as needed. The tightness of the steel bar market has had a stimulating effect on warehouse business. Orders placed include a 1000-ton lot of high carbon steel bars for an automobile parts manufacturer. The demand for plates continues slow. However, the Standard Oil Co. will shortly require 3000 tons of plates for tanks for its new refinery in Toledo, Ohio, and some boat contracts are being figured on by Lake shipyards. In spite of the dullness of the plate market considerable inquiry is being received locally for slabs, this coming mostly from Eastern mills that usually secure their supply in the Pittsburgh district. The structural market continues active. Awards made during the week include the County Jail, Cleveland, 2100 tons, to the Van Dorn Iron Works Co., at $109.20 a ton; a factory building for the Firestone Tire & Rubber Co., Akron, 700 tons, to the McClintic-Marshall Co.; 200 tons for the Lang Body Co., Cleveland, and 200 tons for the Virginia-Carolina Chemical Co., Charleston, S. C., to the Fort Pitt Bridge Works, and a factory building for the Maxwell Motor Co., Detroit, 200 tons, to the Russell Wheel & Foundry Co., Detroit. New inquiries include several hundred tons for two factory buildings for the Cleveland Tractor Co. and 250 tons for a building for the Columbia Chemical Co., Barberton, Ohio. The demand for sheets and light plates is very active and local mills are booking orders for blue annealed sheets in the heavier gages on the blue annealed basis, although quotations on the plate basis have not entirely disappeared. The demand for hard steel bars for reinforcing work is still very active. Considerable new inquiry is coming out for wire, but the situation is tight and some of the mills are declining to take further business. Warehouse prices are as follows:

Steel bars, 3.27c.; plates, 3.57c.; structural shapes, 3.37c.; bands and hoops, 3.97c.; No. 10 blue annealed sheets, 4.47c.; No. 28 black sheets, 5.27c.; No. 28 galvanized sheets, 6.62c.

Bolts, Nuts and Rivets.—The bolt and nut market is fairly active. Specifications are coming out in good volume, and jobbers are placing new orders quite freely. The demand is good from practically all sources but the railroads. Prices are firm Rivet specifications are heavy and, while prices are generally being well maintained, there is an occasional report of some shading.

High Speed Tool Steel.—The demand for high speed tool steel is dull although it is claimed that resale steel has been largely disposed of. Prices are somewhat irregular. Makers quote high speed steel at $1.40 to $1.50 per lb., but it is reported that the former price is being shaded.

Old Material.—There is a little better feeling in the scrap market, but this is not reflected in any firmer prices. Generally the market is weak, but there are few changes in quotations. There is a limited amount of trading between dealers, but very little inquiry from mills. A local mill is offering $19 for heavy melting steel, but small lot transactions in this grade between dealers have been made at $20.25 to $20.50. Compressed steel scrap is lower, a sale of this grade being reported at $17. There is a fair demand from foundries for cast scrap, which is moving at recent prices. Offerings by the Cleveland district salvage board this week include nearly 14,000 tons of heavy melting steel in the form of shell forgings. We quote, per gross ton delivered consumers' yards in Cleveland and vicinity, as follows:

Heavy melting steel	$19.75 to $20.25
Steel rails, under 3 ft	22.75 to 23.00
Steel rails, rerolling	25.50 to 26.50
Iron rails	26.00 to 27.00
Iron car axles	35.00 to 36.00
Steel car axles	33.00 to 34.00
Low phosphorus melting scrap	21.75 to 22.00
Cast borings	14.25 to 14.75
Iron and steel turnings and drillings	10.75 to 11.00
Short turnings (for blast furnaces)	14.00 to 14.50
Compressed steel	17.00 to 17.50
No. 1 railroad wrought	23.00 to 23.50
Cast iron carwheels	22.00 to 22.50
Agricultural malleable	17.50 to 18.00
Railroad malleable	20.75 to 21.25
Steel axle turnings	16.25 to 16.75
Light bundled sheet scrap	15.00 to 15.50
No. 1 cast	23.00 to 24.00
No. 1 busheling	18.50 to 19.00
Drop forge flashings, 10 in. and under	17.00 to 17.50
Drop forge flashings, over 10 in.	14.25 to 14.50
Railroad grate bars	19.00 to 20.00
Stove plate	19.50 to 20.50

American Locomotive Co. Increases Its Steel Casting Output

The American Locomotive Co., which early in the year purchased the Seaboard plant of the Penn-Seaboard Steel Corporation at Chester, Pa., or the plant which was formerly the Seaboard Steel Castings Co., has decided to double the capacity of the plant at an outlay of about $1,000,000. This plant, known now as the Chester Works of the American Locomotive Co., has a capacity, when running full, of about 1100 to 1200 tons of finished castings per month. It is expected that the additions, which have already been started and which consist almost entirely of molding floor and drying oven space, will increase this to 2000 to 2200 tons per month. The plant now has three 25-ton acid open-hearth furnaces and will not need to have its melting capacity increased.

An invitation to attend their meeting on Aug. 28, at the Yale Club, was extended by the American Malleable Castings Association to the members of the Material Handling Machinery Manufacturers' Association and Zenas Carter, secretary of the latter organization, addressed the meeting on the subject of sales promotion and co-operation of the two associations.

EXPORT TRADE

Business Continues Very Satisfactory — Some Mills Out of Market—Japan a Large Buyer

Export trade in steel products continues at a highly satisfactory rate. Orders placed thus far in September indicate that the month will show an improvement over August, which was the best month of the year. On bars, wire products, sheets, tin plate and pipe, the leading independent steel export company is virtually out of the market for shipment this year. Considerably more business could be taken, however, in plates, shapes and rails.

Prices on steel for export continue firm, with the exception of plates, on which 2.75c., New York, or 2.48c., Pittsburgh, can be obtained. In fact, very little of the recent export business in plates has been taken at the full domestic price of 2.65c., Pittsburgh.

Japan is the principal buyer, being in the market for steel products of all descriptions, the aggregate of its inquiries and orders being quite large. Much of the talked-of ship steel, for which many inquiries have been issued, has not been purchased, but export companies are hopeful of closing substantial orders soon. One inquiry for 30,000 ton of plates and shapes for 10 ships to be built in Japan is now in a stage of negotiation which promises well. In the last few months possibly 30,000 or 40,000 tons of plates for Japan have been bought, 24,000 tons going to one Middle Western mill.

The Scandinavian countries have been inquiring here for ship steel. Export companies have learned to their surprise that the United States apparently can compete successfully in Norway, Sweden and Denmark with German steel. Germany is facing production difficulties and high costs which make her less of a factor than she was before the war in the countries closely adjacent to her. It is true that not much Scandinavian business has come here, but there is some likelihood that orders may develop from present negotiations. Denmark has bought 1500 ton of wire rods at $57 and another order of the same tonnage is expected.

Small tonnages of pig iron have been sold for shipment to Japan and Italy. The high prices paid, about $53 c.i.f. Japanese ports, and $50 c.i.f. Italian ports, indicate, perhaps, a shortage of iron in those countries which must eventually be satisfied with larger tonnages. Holland has inquired for 5000 tons of iron of various grades for shipment next year.

The Government of the Netherlands, Colonial Department, has placed an order with the United States Steel Products Co. for 1500 ton of galvanized sheets for shipment to the Dutch East Indies. There are several good-sized inquiries in the market for sheets of light gages, but it is difficult to find mills willing to take this business for shipment this year.

On 270 railroad cars for North Africa, Belgian car builders under-bid American car builders and got the order. There are other small export inquiries in the market for cars on which Belgian car companies are also figuring. The American Locomotive Co. has taken an order for 13 locomotives for Brazil, requiring about 400 to 500 tons of plates, which will be bought this week.

It is reported that the Government of Colombia is considering purchases in the United States for harbor improvement and public works aggregating $25,000,000, the amount of the indemnity to be paid by Congress to that country for land taken for the Panama Canal. The $25,000,000 will be deposited in banks here and remain as a credit for the intended purchases. The Government of Chile is said to be arranging for an issue of about $15,000,000 in bonds in the United States, the proceeds of which will be used to finance harbor improvements in that country.

The important effect of the unfavorable rates of exchange between the United States and European countries is shown by the decrease in iron and steel exports during July, the figures compiled by the Bureau of Foreign and Domestic Commerce showing that shipments in July were but little more than half of those in June, the total of iron and steel exports in July being 287,823 gross tons as compared with a total of 544,580 gross tons in June.

Legislation for Financing Exports

WASHINGTON, Sept. 9.—Congress has taken its first definite step in the way of legislation to facilitate the financing of export trade. The House passed the Senate bill authorizing national banks to invest up to 5 per cent of their capital and surplus in corporations formed to promote international commerce. This is the bill proposed by the Treasury Department and the Federal Reserve Board, following a conference of bankers several months ago, at which time it was determined that the burden of financing of foreign purchases should be shifted from the shoulders of the Government to private banking interests, and on the final roll call the vote stood: yeas, 160; nays, 65; present, 2. Opponents of the bill frankly declared their belief that nothing should be done to encourage exports, and that the recent huge shipments abroad have been responsible for the high cost of living. Advocates of the passage of the measure vainly sought to convince them that some means of financing export trade is necessary in order that foreign countries may become able to produce something, and thus be in a position to repay the debts already incurred.

The Edge bill will come up in the Senate within a few days. This bill, which has strong support, authorizes the formation of foreign financing corporations under the supervision of the Federal Reserve Board. It is proposed that these corporations, which may capitalize for $2,000,000, shall issue debentures against foreign securities. The foreign securities will be taken in exchange for American goods. The bonds issued by the proposed corporations would become readily salable in this country, it is expected, because of the supervision of the transactions by the Federal Reserve Board. The Government is not to participate in the financing except in a supervisory way.

Needs and Conditions in Italy

WASHINGTON, Sept. 9.—Announcement of the liberalization of the Italian import restrictions has aroused new interest in Italian markets for American iron and steel industries. The chief items which may now be brought into Italy without special licenses, although still requiring the payment of customs duties, are machine tools and hardware, according to the report of Alfred P. Dennis, our commercial attaché at Rome. Railroad equipment, partly finished iron and steel and agricultural machinery require special licenses from the Italian treasury department.

At the same time, Mr. Dennis writes, German steel rails were offered on the Italian market during July for $86 c.i.f., which would be approximately $81 at the frontier with duties to be paid by the importer. Mr. Dennis said that on the basis of the existing freight rates this is less than American steel rails could be landed for in Italy.

Consul North Winship, at Milan, has sent to the Department of Commerce an interesting statement of the present opportunities for American goods in Italian markets. "At present," writes Consul Winship, "the greater part of the raw and manufactured products coming from the United States pass through too many hands and the ultimate price to the Italian buyer is consequently exceedingly high. While during the war there was an almost utter disregard for cost, and dealers, jobbers and manufacturing plants depended upon speculators and financiers for stocks, conditions are now tending to become normal, and attention is again focused on prices. One reason the United States played a comparatively small part in Italian trade before the war was that its goods were invariably handled by intermediaries in London, Liverpool, Paris, Havre, Ham-

burg, or other cities. The American manufacturer desiring a foothold in Italy must appoint a regular agent here, as do the English, French, and other manufacturers.

"Most of the letters received at this consulate from American firms ask for names of Italian concerns using given lines of goods, but seldom do the inquirers ask for names of parties likely to become their agent. Experience has shown that when names of prospective buyers have been furnished the result has usually been nil, whereas when American manufacturers have appointed a competent and reliable agent excellent results have frequently been obtained. The proper location for a general agent in Italy is Milan, as it is the industrial capital of the country, although particular interests require an agent at Genoa because of its importance as a seaport. This consulate is now receiving letters daily from local concerns who are anxious to sell American manufactures on a commission basis."

Consul Winship also presented a list of American products for which there is a present market in Italy. This line includes automobiles, hardware, kitchen ware, emery wheels, padlocks, razors, sewing needles, pins, etc., and tools, heating appliances, cutlery, gas stoves, agricultural machinery, implements and exchange pieces, especially mowers of medium and small size, and gasoline and heavy oil motor plows, electrical goods, glassworking machinery, printing and bookbinding machinery, sewing and knitting machinery, silk weaving looms and winemaking machinery, plumbing and sanitary supplies."

American manufacturers who contemplate entering the Italian market should send samples without delay, either to a forwarding agent or to the American Chamber of Commerce in Milan, says Consul Winship.

Urges Care in Export Shipping Terms

The following letter of interest to exporters has been sent to members of the National Foreign Trade Council over the signature of O. K. Davis, secretary:

Correspondence from Australia has reached the National Foreign Trade Council complaining of what is termed by Australians as "the misuse by American manufacturers and exporters" of the term "f.o.b. New York." This correspondence indicates that a situation has arisen, as a result of the practice complained of, which might easily prove seriously detrimental to American commerce with Australia.

The National Foreign Trade Council desires to call the matter to your attention in the hope that a uniformity of practice may be developed on the part of American manufacturers and exporters which will obviate the recurrence of such complaint, either from Australia or any other foreign markets.

The Australian complaint is that American manufacturers and exporters who have quoted "f.o.b. New York" have interpreted that quotation to include merely delivery within the limits of the port of New York, and not necessarily actual delivery of the merchandise onboard the overseas vessel. The Australian contention is that the term "f.o.b. port" has only one meaning, namely, "Free onboard overseas vessel" at the port named; and that a quotation "f.o.b. port" means the purchaser has no charges to meet except those connected with ocean freight, and insurance.

It appears that some American manufacturers and exporters who have quoted prices "f.o.b. New York", or other port, have contented themselves with the delivery of the goods within the limits of the port named, instead of onboard overseas vessel, with the result that charges for cartage, lighterage, storage and other items, have been passed on to the Australian purchaser who had understood that "f.o.b. port" quotation covered delivery of the goods on the overseas vessel. The possibility of adverse effect upon American foreign trade in this situation is obvious, and leads the National Foreign Trade Council to urge upon American exporters generally the wisdom of following invariably a practice under which such complaints cannot possibly arise.

There is no question that the original meaning of "f.o.b. port" was "Free onboard ship", and that is the general and usual interpretation of it among foreigners. The National Foreign Trade Council desires to point out that it is essential to the best practice for American exporters and manufacturers in making an "f.o.b. port" quotation to have it mean "f.o.b. overseas vessel", but in any event the quotation, whatever it is, should be unmistakably clear and explicit. If in quoting prices "f.o.b. port", American exporters or manufacturers have in mind any other delivery than onboard overseas vessel, they should make perfectly plain exactly what they mean by the use of "f.o.b. port", and that any charges for cartage, storage, or other services, are for buyer's account.

Any form of quotation which is susceptible of double interpretation lends itself to the possibility of abuse detrimental to American trade as a whole, and the National Foreign Trade Council urges upon American exporters and manufacturers that they adopt the unvarying practice of making their quotations so explicit as to preclude the possibility of misunderstanding.

British Out After Italian Trade

The American Chamber of Commerce in London says that the British Government is negotiating an arrangement with the Italian Government for the mutual relaxation of import restrictions in favor of one another's goods; British regulations have been relaxed to permit of one year credits to Italy and provision of raw materials and transport facilities are safeguarded. In addition a British commercial counsellor and commercial secretary has been appointed at Rome and the consular representation there is being strengthened.

The American Chamber of Commerce learns the Italians are equally anxious to trade with the United States. Although Britain is nearer geographically to Italy, production conditions are so upset in Great Britain that the United States should be able to guarantee as prompt if not prompter deliveries despite the longer ocean voyage.

South and Central American Business

According to Julian Sarzano, president Pan-American Chamber of Commerce, New York, the time is ripe to make efforts toward securing South and Central American business. Mr. Sarzano says: "Many appropriations have lately been made for construction of docks, warehouses and port works and for improvements of old ones. This implies handling machinery of all kinds. We are continuously receiving inquiries on loading and unloading machinery as well as on similar apparatus for docks, warehouses and industrial establishments. We do not buy or sell goods and do not receive commissions. We act only as a Chamber of Commerce."

Resumption with Hungary

The War Trade Board Section of the Department of State announces that, effective Sept. 2, 1919, the resumption of trade and communication between the United States and Hungary has been authorized. Exports to Hungary will be controlled by individual export licenses, but such licenses will be issued freely upon application, except with respect to the commodities whose exportation to Hungary will be restricted for military reasons, such as aircraft, armor plates, barbed wire, etc.

Imports from Hungary may take place without individual import licenses in most cases.

A three-session institute for retailers will be held during the New Orleans convention of the Associated Advertising Clubs of the World, at New Orleans, Sept. 21 to 25. The advertising association states that retailers can attend these and other sessions of this year's advertising convention without being members of the Association. An outline for the discussions is as follows: First Day, "How Salesmen Can Analyze Themselves"; second day, "How to Analyze Customers"; third day, "A Study of Merchandise, and How to Advertise a Retail Store."

At Georgia School of Technology, Atlanta, Ga., there is being installed a full equipment of electrical machinery made by the Westinghouse Electric & Mfg. Co., at East Pittsburgh.

British Iron and Steel Market

Tin Plates Advanced—Sheet Market Strong—Belgian Bars and Plates Sold to India

(By Cable)

LONDON, ENGLAND, Sept. 8.

In the domestic pig-iron market demand for foundry iron is lighter and supplies of hematite iron seem more plentiful, with a surplus available for shipment. The Ebbw Vale, Cyfaithfa and Dowlaie plants are closed because of repairs.

Ship plates are difficult to procure, with makers fully sold up, but angles seem to be easier. Steelmakers generally show a disposition to quote for the first half of 1920. Tin plates are in increasing demand. A further advance of 12½ per cent in wages at the Welsh steel mills has resulted in a further increase in the basis price, making it 36s. to 36s. 6d. per base box. Works are congested and deliveries are in arrears, with stock plates scarcer.

The market for black sheets is very strong, with the leading makers refusing to quote and some asking extravagant prices. Japan is an active buyer. In galvanized sheets more works are refusing to quote. The lowest quotation is £30 for No. 24 gage, with values up to £32 asked. The demand for thin specifications is increasing.

Harland & Wolff, Ltd., has purchased the Henderson & Inglis shipyards on the Clyde.

The British coal production for the week ended Aug. 9 was only 2,462,000 tons, compared with 4,644,000 tons for the week ended June 7, the decrease being due to the 7-hr. day, malingering and to the Yorkshire strike. The output for the weeks ended Aug. 16 and Aug. 23 was 3,726,000 tons and 3,989,000 tons, respectively.

Belgian steel bars have sold at £19 15s., rods at £21 and plates at £27, all c.i.f. India.

The German pig-iron output for July was 573,000 metric tons, with the crude steel output at 796,000 tons and the finished steel production at 620,000 tons. [Output for the first half by months was published in THE IRON AGE, Sept. 4.] It is reported that the German Steel Works union has been extended to the end of the year by order of the German Government.

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalents figured at $4.15 for £1, with the reservation that most makers have temporarily withdrawn prices:

	£ s. d.	£ s. d.	
Pig Iron:			
East coast hematite	10 0 0	.....	$41.50 .....
West coast hematite	10 4 6	.....	42.43 .....
Scottish foundry, No. 1	10 0 0	to 10 10 0	41.50 to $43.57
Billets	15 0 0	.....	62.25 .....
Tin plate and sheet bars	14 0 0	.....	58.10 .....
Rails, 60 lb. and upward	16 10 0	.....	68.47 .....
			Cents per lb.
Bars, ⅜ to 3 in.	20 5 0	.....	3.75 .....
Beams	17 10 0	.....	3.24 .....
Plates	18 5 0	.....	3.58 .....
Plates, ship	20 10 0	.....	3.80 .....
Plates, boiler	22 10 0	.....	4.17 .....
Bar iron, stand. crown	22 0 0	.....	4.07 .....
Galvanized sheets	30 0 0	to 32 0 0	5.55 to 5.90
Tin plates, 14 x 20 coke, 112 sheets, 108 lb., f.o.b. Wales.	1 16 0	to 1 16 6	$7.47 to $7.57

The American Society of Mechanical Inspectors, 35 West Thirty-ninth Street, at a meeting in the Engineering Societies Building Oct. 23, will officially present C. E. Johansson of C. E. Johansson, Inc., New York, with the honorary membership recently voted him. At the same meeting Arthur Knapp, of Arthur Knapp Engineering Co., will lecture on the mechanical inspection equipment of the United States Bureau of Standards. The society will move into the Engineering Societies Building on West Thirty-ninth Street about Oct. 1. The *Inspector*, the organ of the society, will move to 10 West Forty-seventh Street.

IRON AND INDUSTRIAL STOCKS

Values Reach High Level and Then Decline—Crucible Steel Very Active

The continued rise in market values was checked on Thursday and a decline started when the labor situation was again brought to the fore by Samuel Gompers' telegram to President Wilson requesting a conference with the officials of the United States Steel Corporation. The sensation of the week was the violent rise of Crucible Steel to 194¾, attributed to a trapped short interest, and the equally rapid decline to a closing price on Saturday of 168½. Baldwin Locomotive was also featured by wide swings. Other steels and the coppers moved within a five point range. Monday prices were irregular without any definite trend, but Tuesday the market turned strong in the belief that there would not be a strike in the steel trade.

The range of prices on active iron and industrial stocks, from Tuesday of last week to Wednesday of this week, was as follows:

Allis-Chalm. com.	41 - 46¾	Int. Har. com.	133 - 138½
Allis-Chalm. pf.	— - 93½	La Belle Ir. com.	— - 107½
Am. Can com.	52¼ - 57⅜	Lackaw. Steel	80½ - 84⅜
Am. Can pf.	— - 104⅞	Lake Sup. Corp.	21½ - 23½
Am. C. & Fd. com.	133½-138⅝	Lima Loco.	93 - 98
Am. C. & Fd. pf.	117⅛-117¼	Midvale Steel	51 - 55⅛
Am. Loco. com.	91 - 99	Nat.-Acme	34½ - 37½
Am. Loco. pf.	105½-106	Nat. E. & St. cm.	75⅞ - 79
Am. Ship com.	124 -127	Nat. E. & St. pf.	102 -103¼
Am. Ship pf.	— - 88	N. Y. Air Brake	109 -114
Am. Stl. Fd. com.	39¾ - 41⅞	Nova Scotia Stl.	75½ - 84
Am. Stl. Fd. pf.	95⅝ - 96	Pressed Stl. com	87⅞ - 95
Bald. Loco. com.	113½-132	Pressed Stl. pf.	— -101
Bald. Loco. pf.	— -105	Ry. Stl. Spg. cm.	96 -101
Beth. Steel com.	86⅝ - 90	Republic com.	89¾ - 96⅞
Beth. Stl. Cl. B.	88⅛ - 97	Republic, pf.	104¾-105¼
Case, J. I., pf.	— -100½	Sloss com.	65¾ - 66¾
Cent. Fdy. com.	30 - 32½	Superior Steel	42 - 42½
Cent. Fdy. pf.	55 - 62½	Transue-Williams	56½ - 58
Chic. Pneu. Tool	78½ - 79	Un. Alloy Steel	51½ - 54¼
Colo. Fuel	44⅞ - 48	U. S. Pipe com.	31¾ - 34½
Cru. Steel com.	167½-194¾	U. S. Pipe pf.	67⅞ - 68½
Cru. Steel pf.	102½-105	U. S. Steel com.	102⅜-107⅝
Deere & Co. pf.	— -101	U. S. Steel pf.	115¼-116¼
Gen. Electric	166⅛-172½	Va. I., C. & Coke	— - 60
Gt. No. Ore. Cert.	43½ - 45¾	Westingh. Elec.	53⅞ - 57¼
Gulf States Steel	59 - 62		

Dividends

The Allis-Chalmers Mfg. Co., quarterly, 1¾ per cent on the preferred and extra ¾ per cent on account of accumulated dividends, payable Oct. 15.

The American Car & Foundry Co., quarterly, 3 per cent on the common and 1¾ per cent on the preferred, payable Oct. 1.

The American Steel Foundries Co., quarterly, 75c. on the common, payable Oct. 15, and 1¾ per cent on the preferred, payable Sept. 30.

The Sloss-Sheffield Steel & Iron Co., quarterly, 1¾ per cent on the preferred, payable Oct. 1.

An issue of $80,000 of 7 per cent cumulative preferred stock has been voted by the Coppus Engineering & Equipment Co., Worcester, Mass., to finance the construction of a new foundry building adjoining the present plant. Half the issue will be reserved for common stockholders and employees, the remainder being sold to the public without the aid of brokers.

In an address on "Pan-Americanism in Weights and Measures," delivered before the commercial conference of the Pan-American Union, Frederick A. Halsey, commissioner American Institute of Weights and Measures, condemns the metric system and urges the English system. Mr. Halsey briefly traces the use of the metric system in France, where it was in use by compulsory law from 1793 to 1812, when it was repealed by Napoleon. In 1837 the metric law was reimposed, the people having returned to the "Systeme Usuelle." In further support of his arguments, Mr. Halsey points out that the metric system was adopted by law in Latin American countries between 1850-60, but that to-day the people use it only to the extent the law compels. A census of machine tools in Latin-American countries under pre-war conditions showed 39.3 per cent of United States manufacture; 43.2 British; 17.5 per cent French, Belgian and German. These last named were the only tools made to metric measurements.

Governing Sale of Shell Steel

The largest sale of recent weeks made by the Boston District Salvage Board, 19 Portland Street, was that of approximately 3500 gross tons of 155 mm. steel shell forgings at the Potter & Johnston Machine Co., Pawtucket, R. I., divided into 10 lots. Nine of these lots were awarded to the Perry, Buxton, Doane Co., South Boston, for $19.06 per gross ton. One of these lots of about 600 gross tons was awarded to the General Electric Co., West Lynn, for $22 per gross ton. Fifty tons of steel cartridge containers (scrap) were awarded to the Spencer Wire Co., Worcester, Mass., for $17.01 per gross ton, f.o.b. South Boston; H. Cohen & Co., Chelsea, bid $8.50 per gross ton for 5994 lb. of 155 mm. steel adapters, Scituate, Mass.; all bids for 80 tons of 6 7/16-in. diagonal gothic section steel blooms at the Mead Morrison Mfg. Co., Gloucester, Mass., were disapproved on account of being too low.

The Government asks for proposals as follows:

The New York District Salvage Board of the United States Ordnance Department, 1107 Broadway, offers for proposals until 11 a.m., Sept. 22, at the Hyatt Roller Bearing Co., Harrison, N. J., 288,855 lb. 1½-in. Bessemer screw stock, and at the American Can Co., Edgewater, N. J., 1,689,766 lb. 75 mm. forgings, offered until 11 a.m., Sept. 25.

The Pittsburgh Office, Chamber of Commerce Building, offers until 11 a.m., Sept. 15, at Crucible Steel Co., Midland, Pa., about 94,900 lb., 3⅞-in. round steel bars, 71¼ and 64½ in. long; at Edgewater Steel Co., Oakmont, Pa., about 152,-997 lb. 240 mm. howitzer tubes, 18 ft. 2 in. and 7 ft. 8 in. long and 17 and 20 in. diameter.

The Bridgeport office, Liberty Building, will accept proposals until 1.30 p. m., Sept. 16, on the following: At United States Government Warehouse 188, East Springfield, Mass., about 1,397,270 lb. chrome steel, ¾ x ⅜ in. in lengths of 15 ft.; at Colts Patent Fire Arms Mfg. Co., Hartford, Conn., about 10,412 lb. cast steel rod, 0.278 in. diameter; at Morris Bailey & Co., Pittsburgh, Pa., about 125,820 lb. hot rolled strip steel, 2 1/16 x 16 gage.

The Jeffersonville, Ind., Zone Supply Officer, Surplus Property Division, offers for bids until Sept. 20, about 2,603,-830 sleigh shoe bolts of soft steel and iron. This office also offers about 6000 hub bands for escort wagons, of malleable iron, on which bids are open until 10 a.m., Sept. 24.

The Pittsburgh District Salvage Board reports the following recent sales: About 380,360 lb. 5 in. steel billets for axles to William F. Wimmer Co., Pittsburgh, at $20.55, and a duplicate amount to the Allegheny Forging Co., Pittsburgh, at $28.25. About 29,360 lb. steel for making ingot eyes were sold to the William F. Wimmer Co. at $20.77, and a duplicate amount to the Allegheny Steel Co. at $28.25. The William F. Wimmer Co. is also a purchaser of about 18,725 lb. hot rolled open hearth strip steel.

Transit Privileges Proposed

Proposed revisions of the regulations governing fabrication of iron and steel in transit to provide uniform rules on all lines will be considered at a meeting of the New York District Freight Traffic Committee, 143 Liberty Street, Sept. 12, at 10 a. m. The meeting will be open to representatives of iron and steel interests and those unable to be represented have been invited to submit views in writing previous to the meeting. The committee has suggested that the proposed privileges be granted only to plants keeping records inspected by the Freight Inspection Bureau, which has special jurisdiction. The proposed changes include: Consolidation in the plant of inbound material and monthly proportionate division of the total tonnage among all roads serving the plant; and the granting of transit privileges such as, bending, bolting, boring, counter sinking, cutting or shearing, drilling, painting, planing, punching, reaming, riveting, sawing and welding.

Formal Application Filed

The Western Association of Rolled Steel Consumers, Chicago, has filed at Washington with the Federal Trade Commission a formal application in its move to have Chicago established as a price basing point for iron and steel products on a plane of equality with Pittsburgh. The new application is designed to supplant one of a preliminary character made earlier and which was published in THE IRON AGE of July 24. In the new application are given a number of specific examples which are cited to show the manner in which the alleged discrimination operates against Western consumers. It also is declared in the document that the Pittsburgh base was never adhered to prior to the formation of the United States Steel Corporation.

The association also has sent a letter to Secretary Redfield, of the Department of Commerce, taking issue with statements he had made favoring the retention of the Pittsburgh base.

Blast Furnace Improvement

A great deal of activity is developing in blast furnace improvement and repair work, particularly in the East. Arthur G. McKee & Co., Cleveland, have just taken orders for two Kling-Weidline dry gas cleaners for the Cambria Steel Co., Johnstown, Pa., and one dry gas cleaner for the Brier Hill Steel Co., Youngstown, Ohio, and are now installing a cleaner for the Pittsburgh Crucible Steel Co. Other orders taken by McKee & Co. include a furnace top for the LaBelle Iron Works, Steubenville, Ohio, a furnace top for the Thomas Iron Co., Hokendauqua, Pa., the reconstruction of the Crane Iron Works furnaces of the Empire Iron & Steel Co., Catasauqua, Pa., which will include the rebuilding of a furnace, new bin system, new stove and new power equipment, and the rebuilding of a furnace for the Eastern Steel Co., Pottstown, Pa.

French Blast Furnaces

Statistics of French blast furnaces, issued by *Moniteur des Intérêts Matériel*, show that in the Nancy and Eastern district only six furnaces are now in blast out of 40 before the war, when the daily output was 4865 tons as compared with 510 tons per day now. In the Longwy district, out of 36 furnaces only two are in blast, with an output of 320 tons per day. The furnaces of this district are to be restarted soon, it is stated. Of the 34 furnaces in the district of the South, Central and West of France 20 are in blast with an output of 875 tons per day.

New Mark Coke Ovens Operating

The Steel & Tube Co. of America produced its first coke at the Mark plant, Indiana Harbor, Ind., a week ago. Only one of two batteries of 60 ovens which were recently completed is in operation, but the other battery will begin producing in a short time. When in full blast the two batteries will have a capacity of reducing 75,000 tons of coal a month. The construction of two batteries in addition to those just completed is contemplated.

Manganese Ore from India

Manganese ore exports from India for the fiscal year ended March 31, 1919, were officially 385,361 gross tons, as compared with 433,331 tons in the previous fiscal year. Of the former exports Great Britain took 295,230 tons; France, 57,400 tons, with smaller amounts to Belgium, Italy, Japan and the United States.

Bannon, Bodinson, MacIntyre, 417 Market Street, San Francisco, recently incorporated as engineers and manufacturers of conveying, screening, elevating, mining and power transmitting machinery. Charles P. Bannon was formerly sales manager of the Best Steel Casting Co., San Francisco. The new company also represents the Stephens-Adamson Mfg. Co., Aurora, Ill.; Medart Patent Pulley Co., St. Louis, and the Standard Conveyor Co., St. Paul, Minn., formerly the Minnesota Manufacturers' Association.

Work is being rushed on the plant of the Eastern Rolling Mill Co., Canton, Baltimore, and indications are that six of the 12 mills will be in operation in January and the remainder in March. It is stated that about 1400 men, most of them skilled workmen, will be employed.

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin,	Lead		Spelter	
Sept.	Lake	Electro-lytic	New York	New York	St. Louis	New York	St. Louis
3.....	23.25	22.50	56.25	5.90	5.75	7.85	7.50
4.....	23.00	22.25	56.25	5.90	5.75	7.80	7.45
5.....	23.00	22.25	56.25	5.90	5.75	7.75	7.40
6.....	23.00	22.25	.....	5.90	5.75	7.75	7.40
8.....	23.00	22.50	56.50	5.90	5.75	7.72½	7.37½
9.....	23.00	22.50	56.50	5.90	5.75	7.70	7.35

NEW YORK, Sept. 9.

There has been very little demand for any of the metals in the past week and price changes have been small. Copper demand has been satisfied in most cases by metal in second hands. The tin market has been extremely quiet, but spot tin is scarcer. Activity in lead has been moderate, with prices, if anything, firmer. The zinc market has declined. Antimony is unchanged.

New York

Copper.—There has been very little change in the copper market in the last week. The small demand that has appeared has been satisfied in most cases by metal from second hands which has been sold for early delivery at anywhere from 22.25c. to 22.75c., New York. We therefore quote the market for electrolytic copper at 22.50c., New York, for September delivery, with Lake copper held at about 23c., New York. The large producers continue to maintain their quotations on electrolytic copper at 23.50c. for September and 24c. for October and last quarter and manifest no disposition to make sales. It is apparent that consumers in general are well covered for September and some of them for part of their October needs. This being the case, the larger producers can confidently wait for the demand which will necessarily spring up in the next few weeks for last quarter needs. In the meantime speculators and others who bought copper from 16c. to 20c. are satisfying the week to week necessities at the quotations mentioned above.

Tin.—The tin market has been exceedingly quiet in the past week. Buyers have shown some interest in prices for prompt and far future deliveries, but owing to conditions have not been able to bring themselves to make purchases. As a result the market has been a slow and drifting one. Spot tin, not only Straits but all grades, has been extremely difficult to get in the last week. The heavy arrivals have apparently all been absorbed and shipping conditions in England are reported as being unusually bad. As a result spot Straits tin has advanced to 56.50c., New York, which we quote as the market. The uncertainty as to a strike in the steel industry has also been a retarding influence in the market. Quotations to-day for future delivery were as follows: September shipments of Straits tin from England, 54.25; September-October shipments from England, 53c., and English Lamb & Flagg for delivery early in October, 53.25c. The monthly tin statistics of the New York Metal Exchange show that in August 4345 gross tons were delivered into consumption, of which 2270 tons came in at Atlantic ports. In addition to this the amount in stock and landing on Aug. 31 was 920 tons. At the end of the month the quantity afloat was reported to be 3590 tons. For the first eight months of this year the total imports have been 11,556 tons, of which 8805 tons came from the Straits and Australia. The total receipts compare with 28,675 tons in the same eight months of 1918.

Lead.—The lead market has been practically stationary in the last week. There have been some offerings on the New York Metal Exchange as low as 5.75c., New York, but it is believed that these have been small and easily absorbed or withdrawn. To-day the market is firmer with practically all producers maintaining their quotation at 6c., New York. Some dealers report an active market in the last few days. We quote 5.90c., New York, as a fair appraisal of the market.

Zinc (Spelter).—Very little business is reported to have been done in zinc in the last week and as a consequence of offerings by small producers and dealers quotations for prime Western have declined slightly to 7.35c. to 7.40c., St. Louis, or 7.70c. to 7.75c., New York, at which levels a little business is reported. Consumers are not at all interested nor are producers in general anxious for business at the present levels. A fair business has been done in special grades for domestic consumption.

Antimony—The market is quiet and unchanged at 9.25c. to 9.50c., New York, duty paid, for wholesale lots for early delivery.

Aluminum.—No. 1 virgin metal, 98 to 99 per cent pure, is unchanged at 32c. to 33c., New York, for wholesale lots for early delivery.

Old Metals.—The market is quiet. Prices are as follows:

	Cents per lb.
Copper, heavy and crucible	22.00
Copper, heavy and wire	20.00
Copper, light and bottoms	18.00
Brass, heavy	14.50
Brass, light	11.00
Heavy machine composition	20.00
No. 1 yellow rod brass turnings	12.75
No. 1 red brass or composition turnings	16.00
Lead, heavy	5.50
Lead, tea	4.25
Zinc	6.00

Chicago

CHICAGO, Sept. 8.—There is some trading in copper, but the market is by no means active. Numerous inquiries for fourth quarter delivery are current, but producers are disinclined to take this business. Tin is firm in the absence of arrivals of cheaper metal from the East. A moderate amount of lead is being sold by small producers at concessions, but not enough to affect the market quotations. Spelter continues weak and has again declined and small amounts are beginning to move at the falling prices. Antimony is unchanged. There have been no changes in old metal prices. We quote copper at 23c. to 23.50c. for carloads; tin, 60c. to 63c.; lead, 5.65c. to 5.70c.; spelter, 7.37½c. to 7.50c.; antimony, 10c. to 11c. On old metals we quote copper wires, crucible shapes, 17c.; copper clips, 16c.; copper bottoms, 15c.; red brass, 17c.; yellow brass, 11c.; lead pipe, 4.25c.; zinc, 5c.; pewter, No. 1, 30c.; tinfoil, 35c.; and block tin, 40c.; all these being buying prices for less than carload lots.

St. Louis

ST. LOUIS, Sept. 8.—The non-ferrous markets have been quiet with lead closing, car lots, at 5.67½c. and spelter, car lots, weak at 7.35c. In less than car lots the quotations were: Tin, 60c.; copper, 23.50c.; antimony, 10c.; lead, 5.90c. to 6c.; spelter, 7.75c. In the Joplin district ore demand was light, with zinc blende, basis 60 per cent, top price $46 per ton; calamine, basis 40 per cent, $25 to $30 per ton; lead ore, basis 80 per cent, $67.50 per ton. The averages for the week for the district were: Lead, $67; calamine, $30; blende, $46 per ton. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 7.50c.; heavy yellow brass, 10c.; heavy red brass and heavy copper and copper wire, 15c.; light copper, 13c.; pewter, 35c.; tinfoil, 43c.; zinc, 4c.; lead, 4c.; tea lead, 3c.; aluminum, 18c.

Cincinnati

CINCINNATI, Sept. 9—Both copper and brass scrap show some improvement. Heavy and crucible copper are quoted around 18c., and copper wire from 18c. to 18.25c. Light copper is firm at 14c. to 14.25c. No transactions lately have ben made in block tin pipe that is unsteady around 50c. to 52c. No. 1 pewter is a trifle firmer and is quoted at 38c. to 40c. Lead ranges from 4.25c. to 4.50c.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

The prices below, except on nuts, bolts, rivets and spikes, are based on those announced at Washington by the Industrial Board on March 20, 1919, effective the following day, which since that date have largely governed market transactions, though there have been variations, as indicated in market reports on other pages.

Freight rates from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, with revisions effective Nov. 1, 1918, in carloads, to points named, per 100 lb., are as follows: New York, 27c.; Philadelphia, 24.5c.; Boston, 30c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, $1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is $1.315, minimum carload 40,000 lb.; and $1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c.; minimum carload 46,000 lb.; Denver, 99c.; minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs:

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 2 to 6 in., on one or both legs, ¼ in. thick and over, and Zees, structural sizes, 2.25c.

Wire Products

Wire nails, $3.25 to $3.50 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of $1.50, and shorter than 1 in., $2.00. Bright basic wire, $3.15 per 100 lb.; annealed fence wire, Nos. 6 to 9, $3.00; galvanized wire, $3.70; galvanized barbed wire and fence staples, $4.10; painted barbed wire, $3.40; polished fence staples, $3.40; cement coated nails, $2.85 base; these prices being subject to the usual advances for the small trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 60 per cent off list for carload lots, 59½ per cent for 1000-rod lots, and 58½ per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$3.90 base
Large boiler rivets.....$4.00
¼ in., 5/16 in. and 7/16 in. diameter....60-5 per cent off list
Machine bolts, hp. nuts, ⅜ in. x 4 in.:
Smaller and shorter, rolled threads.....60 per cent off list
Cut threads.....50-10 per cent off list
Larger and longer sizes.....45-5 per cent off list
Machine bolts, c.p.c. and t. nuts, ⅜ in. x 4 in.:
Smaller and shorter.....40-10-5 per cent off list
Larger and longer.....40 per cent off list
Carriage bolts, ⅜ in. x 6 in.:
Smaller and shorter, rolled threads..50-10 per cent off list
Cut threads.....50 per cent off list
Larger and longer sizes.....40-5 per cent off list
Lag bolts.....60 per cent off list
Plow bolts, Nos. 1, 2 and 3.....50-5 per cent off list
Plow bolts, Nos. 4 to 10.....50-5 plus 20 per cent off list
Hot pressed nuts, sq. blank.....3.10c. per lb. off list
Hot pressed nuts, hex. blank.....3.10c. per lb. off list
Hot pressed nuts, sq. tapped.....2.85c. per lb. off list
Hot pressed nuts, hex. tapped.....2.85c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank....3.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped....2.85c per lb off list
Semi-finished hex nuts:
⅝ in. and larger.....70 per cent off list
9/16 in. and smaller.....75-10 per cent off list
Stove bolts in packages.....75-10 per cent off list
Stove bolts in bulk.....75-10-2½ per cent off list
Tire bolts.....60-10 per cent off list

The above discounts are from Aug. 4, 1919.
All prices carry standard extras, Pittsburgh basis.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $52; chain rods, $60; screw, rivet and bolt rods and other rods of that character, $60. Prices on high carbon rods are irregular. They range from $65 to $75, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, ½ in., 9/16 in. and larger, $3.35 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ⅝ in., 7/16 in. and smaller, $3.85 to $4 per 100 lb. in lots of 200 kegs of 200 lb. each or more; track bolts, $4.35 to $4.50 per 100 lb. in carload lots of 200 kegs or more, with the usual extras for small lots. Boat and barge spikes, $3.85 to $4 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh.

Terne Plates

Prices of terne plate are as follows: 8-lb. coating, 200 lb., $13.80 per package; 8-lb. coating, I. C., $14.10; 12-lb. coating, I. C., $15.80; 15-lb. coating, I. C., $16.80; 20-lb. coating, I. C., $18.05; 25-lb. coating, I. C., $19.30; 30-lb. coating, I. C., $20.30; 35-lb. coating, I. C., $21.30; 40-lb. coating, I. C., $22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. from mill. Prices on bar iron are 2.75c.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛, ¼ and ⅜	50½	24	⅛ and ¼	29½	2½
½	54½	40	⅜	30½	3½
¾ to 3	57½	44	½	34½	16½
			¾ to 1½	30	23½

Lap Weld

2	50½	38	1¼	24½	9½
2½ to 6	53½	41	1½	31½	17½
7 to 12	50½	37	2	32½	18½
13 and 14	41	..	2½ to 6	34½	21½
15	38½	..	7 to 12	31½	18½

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	46½	29	⅛, ¼ and ⅜	28½	11½
½	51½	39	½	33½	20½
¾ to 1½	55½	43	¾ to 1½	39½	24½
2 to 3	56½	44			

Lap Weld, extra strong, plain ends

2	48½	37	1¼	25½	10½
2½ to 4	51½	40	1½	31½	17½
4½ to 6	50½	39	2	33½	20½
7 to 8	46½	33	2½ to 4	35	23½
9 to 12	41½	28	4½ to 6	34½	22½
			7 to 8	26½	14
			9 to 12	21½	9½

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipe have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh:

Lap Welded Steel		*Charcoal Iron*	
3½ to 4½ in.	40½	3½ to 4½ in.	—16
2½ to 3¼ in.	30½	3 to 3¼ in.	— 1½
2¼ in	24	2½ to 2⅝ in.	+ 1
1¾ to 2 in.	19½	2 to 2½ in.	+10
		1¾ to 1⅞ in.	+20

Standard Commercial Seamless—Cold Drawn or Hot Rolled

	Per Net Ton		Per Net Ton
1 in.	$327	1¾ in.	$207
1¼ in.	267	2 to 2½ in.	177
1⅝ in.	257	2¾ to 3¾ in.	167
1½ in.	207	4 in.	187
		4½ to 5 in.	207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiations.

Sheets

Makers' prices for mill shipments on sheets of United States standard gage in carload and larger lots are as follows:

	Cents per lb.
Blue Annealed—Bessemer	
No. 8 and heavier	3.50
Nos. 9 and 10 (base)	3.55
Nos. 11 and 12	3.60
Nos. 13 and 14	3.65
Nos. 15 and 16	3.75
Box Annealed, One Pass Cold Rolled—Bessemer	
Nos. 17 to 21	4.15
Nos. 22 to 24	4.20
Nos. 25 and 26	4.25
No. 27	4.30
No. 28 (base)	4.35
No. 29	4.45
No. 30	4.55
Galvanized, Black Sheet Gage—Bessemer	
Nos. 10 and 11	4.70
Nos. 12 to 14	4.80
Nos. 15 and 16	4.95
Nos. 17 to 21	5.10
Nos. 22 to 24	5.25
Nos. 25 and 26	5.40
No. 27	5.55
No. 28 (base)	5.70
No. 29	5.95
No. 30	6.20
Tin-Mill Black Plate Bessemer	
Nos. 15 and 16	4.15
Nos. 17 to 21	4.20
Nos. 22 to 24	4.25
Nos. 25 to 27	4.30
No. 28 (base)	4.35
No. 29	4.40
No. 30	4.40
Nos. 30½ and 31	4.45

PERSONAL

C. H. Vincent has been appointed secretary of the Cleveland branch of the National Metal Trades Association to fill a vacancy caused by the recent death of M. F. McGovern, and assumed his duties during the past week. Mr. Vincent was for 31 years manager of the Moline, Ill., plant of E. & T. Fairbanks & Co., and for the past ten years has been a member of the governing board of the Tri-City Manufacturers' Association composed of employers in Moline and Rock Island, Ill., and Davenport, Ia.

L. T. Frederick has joined the Chicago Mica Co., Valparaiso, Ind., as consulting engineer and production manager. Mr. Frederick was formerly process engineer of the Westinghouse Electric & Mfg. Co., Pittsburgh, and has had a broad experience in the manufacture and application of all lines of electrical insulation.

James A. Campbell, president Youngstown Sheet & Tube Co., has been appointed by the National Security League, New York, director for Mahoning County, Ohio, of a movement aimed at combating the spread of un-American radical doctrine by the nation-wide popularization of the Constitution of the United States. George M. Verity, president American Rolling Mills Co., has been named director for Butler County.

John N. Allen has resigned as general manager of the mining and transportation department of the Brier Hill Steel Co., Youngstown, Ohio, to become manager of the steel, coal and coke department of the National Trading Co., Cleveland. Mr. Allen has been with the Brier Hill Co. for seven years, having been purchasing agent of that company for five years before taking charge of the mining and transportation department. Before that he was purchasing agent of the Lackawanna Steel Co. for six years.

Kenneth Joslin, who resigned as chief inspector for the Goddard Tool Co., Chicago, to accept the same position with the Universal Engineering Co., Maywood, Chicago, recently returned to the Goddard company as factory manager.

C. E. Montanes, Spanish manufacturer, visited the Pittsburgh and Youngstown districts last week representing financial interests in Spain planning large industrial extensions and inspecting steel plants. Mr. Montanes was accompanied by O. E. Stevens, vice-president American International Corporation, and J. H. Hood, construction manager Stone & Webster Corporation, Boston.

Frank P. Colville of the sales force of Eaton, Rhodes & Co., Cincinnati, pig iron, coal and coke merchants, has been appointed manager of the company's office at Ashland, Ky.

W. Aubrey Thomas, formerly of Niles, Ohio, has been elected president of the Jenifer Iron Co., Jenifer, Ala., operating a blast furnace. T. E. Thomas, Niles, is secretary-treasurer and John M. Thomas, Milwaukee, Wis., is vice-president.

N. M. Loney, recently resigned as chief engineer of the American Can Co., 120 Broadway, New York, has been elected vice-president of the Thompson-Starrett Co., 51 Wall Street.

A. M. Moreland, formerly with the Carnegie Steel Co., has been elected treasurer of the Slick-Knox Steel Co., Wheatland, Pa. The company expects to begin making automobile frames at its plant by the last of September. The plant has a capacity for 900 frames daily.

A number of changes have been made in officials at the plant of the Pierce-Arrow Motor Car Co., Buffalo, N. Y. Henry May, for many years vice-president and general manager, has resigned and will be succeeded by George W. Mixter. Mr. Mixter was formerly connected with Deere & Co., Moline, Ill., in an official capacity. Walter C. Wrye, secretary and treasurer of the company for some years past, has resigned, and will be succeeded by M. E. Forbes as treasurer. George W. Cooke, general superintendent at the plant, has been succeeded by John T. Guilder. Mr. Pearson, heretofore assistant secretary of the company, has been advanced to the office of secretary.

W. B. Whittemore, formerly with Naylor & Co., New York, and later with Crocker Bros., New York, has been appointed representative of the Matthew Addy Co., Cincinnati and Philadelphia pig-iron merchant, and will cover the New York and New England territory.

S. E. Weaver, for several years manager for the Union Twist Drill Co., in eastern Pennsylvania and southern territory, has joined the sales force of the Davidson Tool Mfg. Corporation, New York, and will represent it in a similar capacity in that territory.

Fred Gehbauer has been appointed special navy yard representative of the Chicago Pneumatic Tool Co., with headquarters at the Philadelphia office, 1740 Market Street.

R. W. McPhee and John Fechnay, who have been associated with L. Stewart Love in the machine-tool business in New York, have joined the machinery sales organization of Barbour, Love & Woodward, Singer Building, New York, in which Mr. Love is now a partner.

William Burleigh, assistant superintendent Packard Motor Car Co. for the last three years, has joined the Machinery Sales & Electric Co., Detroit, as chief engineer. Mr. Burleigh will have charge of the designing, estimating and engineering of elevating and conveying apparatus.

A. A. Schneider, whose appointment as manager of the newly created raw materials division of the American Steel Export Co., New York, was mentioned in last week's issue, entered military service in 1917 as a lieutenant of field artillery. He had for several years been assistant to H. F. Black of the Midvale and Cambria companies at Pittsburgh. In his new connection Mr. Schneider will handle imports, exports and domestic sales of pig iron, manganese, chrome and low phosphorus, iron ores, ferroalloys, coal and coke. The development of markets for these commodities, particularly in foreign fields, is a new undertaking for the American Steel Export Co.

Henry G. Fennell has been appointed a representative of the sales department of the Tredegar Co., Richmond, Va. He formerly represented the following concerns in the South, located at 705 Fourth National Bank Building: Lebanon Valley Iron & Steel Co., Reading Specialties Co., Whitaker-Glessner Co.

Geo. L. Connelly has been appointed Eastern sales manager of the Cleveland Steel Tool Co., Cleveland, with offices at 802 Kinney Building, Newark, N. J.

W. J. McClain now has charge of the sales department for the Buffalo district of the Republic Iron & Steel Co. Mr. McClain has been associated in the management of the Buffalo office for the past six years, prior to which time he was with the Republic company in the mills at Youngstown and with the Carnegie Steel Co.

W. J. Patterson has been appointed manager of sales in the San Francisco district by the Midvale Steel & Ordnance Co., Philadelphia, succeeding Stuart Hazelwood, who some months ago was appointed manager of the forging division with headquarters in Philadelphia.

J. R. Stroh, assistant manager mining department Brier Hill Steel Co., has been named manager, succeeding John N. Allen, resigned.

John Kelly, for several years New York district manager of the Edison Storage Battery Co., has been appointed general sales manager of the company, with headquarters at Orange, N. J. This follows closely upon his former promotion on July 1 to the position of assistant general sales manager.

John Kopf has been appointed manager of the engineering department of the Duff Mfg. Co., Pittsburgh.

He has been identified with the bureau of aircraft production at Dayton, Ohio.

F. W. Claflin, a member of the staff of the consulting engineering firm of Perin & Marshall, New York, has returned from India after an absence of some months. He superintended the demolition of the blast furnace at Battelle, Ala., and its transportation to India where it was re-erected as a part of the plant of the Tata Iron & Steel Co.

A. C. Williams retired Sept. 1 from the presidency and general managership of the A. C. Williams Co., hardware specialties and toys, Ravenna, Ohio, with which he had been identified 57 years. He became a partner in the business with his father in 1872, and at the latter's death in 1886 he became sole proprietor. He has been president and general manager since the company was incorporated in 1905. With his retirement on the 75th anniversary of the establishment of the business he has disposed of a large part of his interest in the company. J. H. Bigalow has succeeded Mr. Williams as president and manager. The new organization also includes Harry L. Cole, vice-president, and superintendent, and Clyde Heisler, secretary and treasurer.

William G. Hammerstrom, formerly general superintendent Lynchburg Foundry Co., Lynchburg, Va., has been appointed general manager of the Steel Castings Corporation, Altavista, Va.

OBITUARY

FRANK J. PATTERSON, for a number of years prominently identified with the foundry industry in Cleveland, died Sept. 3, aged 53 years, after an illness of several months. Mr. Patterson was at one time associated with his father in the City Foundry Co., Cleveland, and later was president of the Patterson Foundry Co. and of its successor, the Ajax Foundry Co., in that city. From 1914 to 1918 he was the proprietor of a machine shop in Philadelphia.

OTTO A. RUEMELIN, works manager and second vice-president Pawling & Harnischfeger Co., Milwaukee, Wis., died Sept. 1. Mr. Ruemelin began his apprenticeship with the Pawling & Harnischfeger Co. After several years as journeyman he was promoted successively to the foremanship of various departments. He rose from assistant superintendent to superintendent, and finally works manager, which position he had held since 1912. His death concluded a period of 30 years' association with the company.

HENRY CLAY HODGES, chairman of the board of the Detroit Lubricator Co., Detroit, and since 1850 a figure in the business life of the community, is dead at the age of 91 years. Insurance business and investments in downtown real estate, with other enterprises, netted him a fortune. Three sons, Charles H., Clarence B. and Frederick W. Hodges, are respectively the president, vice-president and secretary-treasurer of the Detroit Lubricator Co.

WILLIAM J. DAVIS, a member of the firm of C. Davis & Co., Pittsburgh, for the past 10 years, died at his home, Pittsburgh, Aug. 25, after an illness of four months.

EDWARD L. STEPHENSON, president E. L. Sternberger Coal Co., Cincinnati, died after a lingering illness at his home in that city Sept. 7, aged 57 years.

John O. Lamb, president and manager Howard Stove Co., Ralston, Nebr., died Aug. 25, at the Wise Memorial Hospital, Omaha.

Freyn, Brassert & Co., engineers, Chicago, have been retained by the Algoma Steel Corporation, Sault Ste. Marie, Ont., as consulting and supervising engineers in connection with the remodeling of its No. 4 blast furnace.

SHORT TRADE ITEMS

The Scott Gas Appliance Mfg. Co., Inc., Frank J. Scott, vice-president-manager, 1311 E. Street, N.W., Washington, is in the market for castings for making a hot water gas range. Both flat and cored castings are needed and the company will buy gas range cocks, range handles, white enamel work, nickel plating and sheet metal and also small malleable castings for water fittings.

Extensive harbor improvements are projected by the city of Vancouver, British Columbia, about $5,000,000 having been voted for this purpose. In his report, A. D. Swan, the government consulting engineer, recommended among other improvements a harbor terminal railroad, mechanical equipment at the new government wharf and at others when they are completed.

The Goldberg Iron & Steel Co., Columbus, Ohio, will be incorporated with $100,000 capital stock by Harry Goldberg, I. L. Goldberg and others. The new company has acquired the scrap plant of the Topper Bros. Iron Co., which will be enlarged. A locomotive crane and shears will be added.

The United Engine & Mfg. Co., Hanover, Pa., has been changed to The Manley Mfg. Co., York, Pa., and the capital increased from $20,000 to $150,000. The new plant is about four times larger than the Hanover plant. The Manley Mfg. Co. manufactures garage and shop equipment.

The Moore Drop Forging Co., Springfield, Mass., has bought the Page-Storms Drop Forge Co., Chicopee, Mass., and will operate the latter in connection with the former, changing the name of the new acquisition to the Moore Drop Forging Co.

The Carnegie Steel Co. is planning to start its new sintering plant at Farrell, Pa., which has been under construction for about a year and involves the expenditure of $275,000.

A metallurgical exchange has been established in the Tonhalle, Zürich, Switzerland, by the Société pour Valeurs de Fer et d'Acier, Schaffhouse, Switzerland, for selling raw materials and manufactures and for buying Swiss machinery.

Freyn, Brassert & Co., engineers, Chicago, have been retained by the Lavino Furnace Co., Philadelphia, as consulting and supervising engineer in connection with improvements now being made at its Sheridan, Pa., blast furnace.

The Black Steel & Wire Co., for its new steel mill, has purchased a Moore electric furnace from the Pittsburgh Electric Furnace Corporation, Pittsburgh, to make steel for wire ropes.

Upon refusal of the Machinists' Union demand for increased pay a strike was declared at the Cincinnati Screw Co. Sept. 8. Half of the force remained at work.

Gerard Chirichigno and others have incorporated the Youngstown Wire & Iron Co. for $25,000 at Youngstown, Ohio.

The E. W. Bliss Co., machine tool manufacturer, Brooklyn, N. Y., has purchased the Consolidated Press Co., Hastings, Mich.

The name of the Gairing-Needham Tool Co., Detroit, has been changed to the Gairing Tool Corporation.

The Empire Machinery & Supply Co., 66 Exchange Street, Buffalo, has changed its name to the Day Machinery Co.

A petition in involuntary bankruptcy has been filed against the Quint Tool & Machine Works, 232 North Fifth Street, Philadelphia, by a number of creditors.

IDEAS CLASH AT CONFERENCE

Remarks by H. H. Merrick at Chicago Resented by Secretary Mahany

CHICAGO, Sept. 9.—Instead of promoting a spirit of harmony and conciliation between capital and labor, the first day's session of the Our Country First conference, precipitated a spirited controversy between H. H. Merrick, president Chicago Association of Commerce, and Roland Mahany, Assistant Secretary of Labor and chief delegate of the National Administration. Mr. Merrick prefaced his remarks with vigorous criticisms of Government operation of railroads and the various panaceas for social unrest offered by "soap box and special train orators." He then took up President Wilson's conference, which will be held in Washington next month to discuss remedies for the present economic difficulties. In this connection, he said in sarcastic vein "and then let us turn to the American Federation of Labor with 3,000,000 men and say: 'To you gentlemen, because you are organized, and because you have the vote, and because we wish to be re-elected, and certain of us wish high office to be maintained throughout the years until we die, we will surrender everything, you tell us how to operate this business that we have taken over; and you, Mr. Samuel Gompers, appoint 15 men in this conference to tell us how to run these United States.' Agriculture on the other hand with 40,000,000 men will be represented by only three men, he pointed out, and general business by five. Referring to the epidemic of strikes he said: "What is the use in contracting nowadays? Strike? I say this talk of strike has got to stop and if Roosevelt were in the Presidential chair to-day at Washington it would stop. The man who says the industries in the United States upon which 110,000,000 people of our country are dependent and upon which all the world secondarily is dependent shall stop in order that he may have the thing he demands, regardless of its justice, should find his place behind the barbed wire fence of Fort Oglethorpe."

Mr. Mahany took exception to Mr. Merrick's remarks, asserting that his speech was not a proper keynote for the assemblage.

"We are," he said, "facing a period of reconstruction, with labor the woof and business genius the shuttle, and each is necessary. When Mr. Merrick said the way to handle people was to treat them rough, what is that but anarchy? We are either a government of laws or we are not. What we need in this country more than anything else is the old-fashioned neighborly feeling that was the glory of the early days of the Republic, when every man hesitated to do what might be considered an unforgivable wrong to another man in the community."

Delegates from 36 States, capitalists, business men, farmers and industrial leaders are in attendance at the conference. To-day a resolution will be presented calling for the appointment of a committee to prepare and conduct a nation-wide propaganda to offset the propaganda of radical agitators.

Switzerland and German Goods

Refuting the charge in the London *Economist* that the danger exists of German goods being sold as Swiss products, a Swiss merchant has written to that journal stating that there is a special law in Switzerland, enacted Sept. 5, 1918, according to which any falsifications are very heavily fined, and in addition to this no further certificates of origin would ever be issued to firms which had offended in this respect. Further, there is a special warning against sending goods of which the export is prohibited in small quantities by letter post. These are punishable, and the post is strictly controlled.

The Swiss merchant points out that besides the certificate of origin signed by the Chamber of Commerce there is a second control, namely that of the "Spes," i.e., "Syndicate pour l'Exportation Suisse," which was created in Geneva, and of which only Swiss firms established before July 1, 1914, are allowed to be members. In exchange they get a special brand, "Spes," with which all their goods are being marked. While not all the firms in Switzerland are members of this new organization, he says, "everybody feels absolutely sure that any abuse of the certificates of origin is out of the question."

Conspiracy to Defraud Railroad Administration Charged

Arrests were made last week of William Natt, New York, a representative of Joseph Joseph & Bros. Co., New York, and John D. Birmingham, general foreman of the South Braintree reclamation plant of the New York, New Haven & Hartford Railroad, on indictments returned by the Federal grand jury, charging conspiracy to defraud the Railroad Administration of several million dollars' worth of steel rails.

The score of secret service men and representatives of the Department of Justice who had been working on the case for a year say that they found that rails of heavy melting steel quality were being shipped out of the railroad yard with the classification of borings, turnings, drillings and miscellaneous scrap to the yards of Joseph Joseph & Bros. Co., where the cars were either reloaded or shipped, as they were, to steel plants with the labels changed to indicate their true quality. In many cases three-quarters of a car would be filled with the rails with a covering of the poorer quality of scrap. Whereas the Railroad Administration was being given credit for a value of $7.80 a ton, the actual value was about $15.50.

Investigations by detectives were begun when Railroad Administration officials realized that the scrap from the New Haven reclamation yard was not bringing expected financial returns, these returns diminishing continually. This manipulation of labels covered a period of several years. It is alleged that Natt went to Boston every fortnight to arrange for the shipment of the material. The cars in South Braintree were loaded by workmen on order from Birmingham and the true value of the scrap was given. These figures were changed later on the books. The railroad officials state that about 300 cars were shipped from South Braintree each month.

The detectives worked under the direction of J. R. McMahon, chief of the special agents of the New Haven road, and Daniel Shea, assistant United States district attorney. Natt was arrested at the Adams House, Boston, while Birmingham was arrested as he stepped from a train at the South Station, Boston. The men were allowed bail.

Export Traffic Rates

Thomas Lovelace, assistant secretary of the St. Louis Chamber of Commerce, has announced that class and commodity rates on export traffic from the Middle West to South Atlantic and Gulf ports have been decided on by Director-General Hines. They will be substantially the same as the rates to New York on domestic freight and will equalize charges so that Southern gateways to South and Central America can compete on equal terms with the East. Decision to establish the rates is the result of a long fight carried on by Southern interests for their share of the nation's commerce.

The first of the fall and winter meetings of the Pittsburgh Foundrymen's Association will be held in the Hotel Chatham in that city on Monday evening, Sept. 15. The speaker will be Enrique Touceda, who will talk on "Some Pertinent Facts in Connection with Both Gray Iron and Malleable Castings." The program committee of the Pittsburgh Foundrymen's Association for the coming year has been completed and consists of: G. F. Tegan, *Iron Trade Review*; H. M. Meixner, Pittsburgh Piping & Equipment Co.; J. W. Gray, Fort Pitt Steel Castings Co.; T. J. O'Brien, Fort Pitt Malleable Iron Co., and Robert A. Walker, THE IRON AGE.

Machinery Markets and News of the Works

AUTOMOBILE MAKER BUYS

General Motors Corporation's Needs Total $2,000,000 to $3,000,000

Tool Trade on the Whole is Good, Although Business in East Shows a Lull—Export Order Placed by Standard Oil Co.

The General Motors Corporation is in the market for large quantities of machine tools, extensive purchases being made for its Canadian branch factory at Walkerville, Ont., and its tractor plant at Janesville, Wis. It is reported that purchases for the Walkerville plant will total $2,000,000 to $3,000,000.

In the export trade the principal buying of the past week has been done by the Standard Oil Co. of New Jersey, which has placed orders for about 50 tools for shipment to the Rumanian oil fields.

Machine-tool builders are satisfied with the progress of business. A lull in demand has occurred in the East, but this is believed to be a passing phase, due to the present uncertainties over the labor situation. Deliveries on some lines of tools are becoming extended, and in a number of instances manufacturers cannot promise shipment before October or November.

Prices show firmness, with an advancing tendency. Some makes of milling machines are 10 to 15 per cent higher. A maker of punch presses has advanced prices 10 per cent.

In the Chicago and Milwaukee territory trade is brisk. In addition to the purchases of the General Motors Corporation other automotive industries are active. The Moline Plow Co. will replace machinery lost in its Universal tractor plant, which was recently destroyed by fire. The Nash Motors Co., Kenosha, Wis., is about to establish a branch factory at Milwaukee.

Other recent purchases of notable size include about $50,000 worth of tools for the New England plant of the American Steel & Wire Co. and $40 000 to $50,000 worth of tools for the new cylinder shop of the Baldwin Locomotive Works, Philadelphia.

In the New York market there is interest in the probable extensions at the Duesenberg motor plant at Elizabeth, N. J., recently acquired by the Willys Corporation for the manufacture of a new six-cylinder automobile. The American Truck Co. has broken ground for a new plant at Long Island City to cost, with equipment, about $1,000,000.

New York

NEW YORK, Sept. 9.

The past week has been exceedingly quiet in the machinery market. There are fewer inquiries, and sales have also been fewer in number and in small lots. Japan continues prominent in the export market, and several large inquiries are still being figured on, notably one for a shipyard and another for a locomotive shop. The unfavorable exchange situation precludes the possibility of any immediate business of importance with European countries.

During July and August many machine-tool builders booked a satisfactory volume of business, and it is surprising to some prospective buyers of tools that the immediate deliveries which were obtainable 30 or 60 days ago are no longer available. Of course, there are still some tools to be had with fair promptness, but certain sizes of well-established lines are now being quoted for October and November delivery.

A feature of some significance is the increasing demand for tools on time payments. Some companies are accepting orders on this basis, but demand an initial payment of sufficient size to protect them against loss and issue a lien contract which remains effective until final payment on the machine is made.

Time payments or extended credits are also becoming more of a feature in export trade. In fact, some companies now realize that if they are to contend actively for foreign trade they must be prepared to extend longer credits than were granted prior to the war.

Crane business is developing in a small way, but some of the crane companies are very anxious for orders and price-cutting is a natural development. The Midvale Steel & Ordnance Co. has bought a 40-ton ladle crane for its Coatesville, Pa., plant from the Alliance Machine Co. The Lehigh Valley Railroad has bought a 10-ton crane from the Whiting Foundry Equipment Co. The Robins Conveying Belt Co., New York, is in the market for two 10-ton cranes and the Cheswick Power Co., Pittsburgh, is inquiring for a 75-ton power house crane.

The American Truck Co., 19 West Forty-fourth Street, New York, Darwin R. James, president, has broken ground for the erection of its proposed new plant at Thompson Street and Nott Avenue, Long Island City. The structure, with equipment, is estimated to cost about $1,000,000.

The Selective Gas Process Co., New York, has been incorporated with a capital of $300 000 by J. J. A. Carney, J. B. Quinlan and G. W. Colton, 196 Berkeley Place, Brooklyn, to manufacture gas machinery.

The Universal Body Corporation, New York, has been incorporated with a capital of $200,000 by J. N. Sceiba, W. M. Hall and K. Lorenz, 35 Wall Street, to manufacture automobile bodies and motor mechanical appliances.

The Continental Castings Corporation, New York, has been incorporated with a capital of $250,000 by H. O. Bonner, F. E. Beidler and J. J. Flannery, 149 Broadway, to manufacture castings.

The B. & A. Machine Co., New York, has been organized to manufacture machinery, parts, etc. Michael E. Archer, Ralph Q. Kelly and C. Uslan, 260 Grafton Street, Brooklyn, head the company.

The Dualite Mfg. Co., New York, has been incorporated with a capital of $10,000 by P. L. Woodward, E. Holloway and T. H. Wight, 30 Church Street, to manufacture metal products.

The M. N. F. Auto Mfg. Corporation, New York, has been incorporated with a capital of $25 000 by M. Moses, H. Newman and J. Friedman, 956 Second Avenue, to manufacture automobile equipment, parts, etc.

Hammacher, Schlemmer & Co., 133 Fourth Avenue, New York, manufacturer of hardware, etc., have been incorporated in Delaware with capital of $1,800,000 to manufacture tools, machinery, cutlery and other metal products. George F. Bentley, Francis T. Sargent and Hulon Capshaw are the incorporators.

The Equitable Motor Truck Co., has been incorporated with a capital of $50,000 by E. M. Bernstein, M. Monfried and J. C. Barron, 105 Henry Street, to manufacture truck parts, equipment, etc.

The Ivoryloid Co., 200 Fifth Avenue, New York, manufacturer of composition products, has acquired a factory now in course of construction on Eighth Street, near East Avenue, Long Island City, for the establishment of a new plant.

The Kelly-Dennin Co., Albany, N. Y., is planning for the erection of a new one-story machine shop and automobile

service works on Broadway, 150 x 150 ft., to cost about $50,000.

Sliding Valves, Inc., New York, has been incorporated in Delaware with capital of $2,000,000 by W. Irving Glover, Englewood, N. J., Eugene E. Allison and Leslie Pratt, New York, to manufacture valves and valve mechanisms.

The J. Edward Ogden Co., 147 Cedar Street, New York, manufacturer of cross-arm braces, door mechanisms, hardware, etc., has filed plans for the erection of a one-story addition to its plant on Center Street, Bayonne, N. J., to cost about $12,000.

The Columbia Graphophone Co., Woolworth Building, New York, is reported to be planning for the establishment of new plants for the manufacture of talking machines at Newark, N. J., for the New York district, at Philadelphia, Pa., and at Baltimore, Md. The company's main plant is at Bridgeport, Conn. Francis S. Whitten is president.

John N. Willys, head of the Willys-Overland Co., Toledo, Ohio, has organized the Willys Corporation, New York, with capital of $25,000,000 to manufacture a new six-cylinder automobile. The company has acquired the plants of the Duesenberg Motors Corporation, Newark Avenue, Elizabeth, N. J., and at Poughkeepsie, N. Y., which have been used for the manufacture of high-speed motors for Government and other service. It is expected to increase the present plant capacities by enlargements. The new Willys Corporation will also be interested, it is understood, in the other Willys interests, including the New Process Gear Corporation, Syracuse, N. Y., and the Electric Auto-Lite Corporation, Toledo.

The Keister Automatic Mfg. Co., New York, has been incorporated in Delaware with capital of $500,000 by W. R. Randall, Philip L. Neiser and Arthur W. Britton, 65 Cedar Street, to manufacture motors.

The American Sewer Pipe Co., 30 Church Street, New York, a New Jersey corporation, has filed notice of change of name to the American Vitrified Products Co., and at the same time increasing the capital from $3,500,000 to $5,500,000.

The Fabrikoid Co., Newburgh, N. Y., has completed plans for the erection of a one and one-half story addition to its plant on the Homes Cross Roads, 90 x 90 ft., to cost about $80,000, including equipment.

The Hygrade Limestone Co., Gouverneur, N. Y., recently organized, is planning for the purchase of machinery for the production of limestone for agricultural purposes. The company has local properties, and the proposed plant will include quarrying, milling, pulverizing and baking of limestone. Fred J., Frank H. and E. D. Porter, all of Gouverneur, head the company.

Industrial shops will be included in the new vocational school to be erected by the Board of Education, Utica, N. Y., on Mohawk Street. The structure is estimated to cost about $300,000. E. J. Berg, 223 Elizabeth Street, is architect.

The American Can Co., 120 Broadway, New York, has decided to close its plant permanently at Kenilworth, N. J., and will soon offer the entire property for sale. The plant, when first constructed, was used for the manufacture of tin cans for food products; during the war it was devoted to the manufacture of munitions, at one time giving employment to about 4000.

The Eastwood Wire Mfg. Co., Joralemon Street, Belleville, N. J., is having plans prepared for the erection of a two-story brick addition to its plant, 35 x 45 ft., at Joralemon Street and Riverside Avenue, to cost about $15,000.

The Donnelly-Roegner Motor Co., Passaic, N. J., has been incorporated with a capital of $25,000 by James H. Donnelly, John J. Roegner and Edward A. Levy to manufacture auto parts and equipment.

The Campbell Foundry Co., Worthington and Bergen streets, Harrison, N. J., is having plans prepared for the erection of a one-story brick and steel addition, 105 x 120 ft. Runways for cranes of 5 and 10-ton capacity will be installed. The extension is estimated to cost $35,000. William A. Bishop, 9 Clinton Street, Newark, N. J., is engineer.

The Bay Way Foundry, Inc., Washington, N. J., has been incorporated with a capital of $200,000 by William E. A. Wheeler, Alfred W. Trotter and Charles W. Witwer, to manufacture iron and steel castings.

Property of the Martini & Huneke Co. of America, 1201 Hudson Street, Hoboken, N. J., manufacturer of metal products, apparatus for storing inflammable liquids, etc., will be sold by Francis P. Garvan, alien property custodian, 110 West Forty-second Street, New York, on Sept. 16.

The Bayonne Casting Co., Oak Street, Bayonne, N. J., has filed notice of change of name to the Monel Metal Products Corporation.

William E. Quimby, Inc., 209 Parkhurst Avenue, Newark, N. J., manufacturer of electric pumps and kindred specialties, has completed plans for the erection of a two-story brick addition, 48 x 92 ft., at Parkhurst Street, corner of Avenue C, to cost about $20,000.

The Ellis Motor Car Co., 416 Central Avenue, Newark, local representative for the Pierce-Arrow Motor Car Co., has acquired property at New and Wilsey streets, 268 x 339 ft., with existing buildings, for the establishment of new works for truck and motor car service. Later, it is said, a number of one-story buildings will be added. Walter H. Ellis is president.

The Advance Metal Stamping Corporation, Newark, has been incorporated with a capital of $25,000 by Samuel Cohen and Joseph Sennabend to manufacture metal goods.

The New Toy Co., Inc., 200 Fifth Avenue, New York, has acquired property at Central Avenue and Lock Street, Newark, 75 x 215 ft., for the erection of a new plant, consisting of a main factory, with three adjoining buildings, and providing a total of 70,000 sq. ft. It is estimated to cost close to $200,000, and is expected to be ready for occupancy by the end of the year.

The George F. Read Corporation, Newark, has been incorporated with a capital of $100,000 by George F. Read, 113 North Mountain Avenue, Montclair, N. J.; B. E. Dugdale, 261 Chadwick Avenue, and Harry C. Burnett, 31 Clinton Street, Newark, to manufacture garment machinery and equipment.

The Adams Supply Co., Newark, has been incorporated with a capital of $50,000 by George F. Brandenburgh, Irvington, and Charles Hafer, Newark, to manufacture vending machines.

The Driver-Harris Co., Middlesex Street, Harrison, N. J., manufacturer of wire cables, etc., is completing plans for the erection of a three-story reinforced-concrete addition, 50 x 100 ft., to cost about $50,000.

Catalogs Wanted

The Weber & Scher Mfg. Co., 24 Scott Street, Newark, N. J., manufacturer of dies, jigs, fixtures, gages, special machinery and appliance, has recently organized an engineering department and desires catalogs for its files, covering small tools, machine tools, appliances, equipment, stock parts, materials and supplies.

Buffalo

BUFFALO, Sept. 8.

The Jacob Dold Packing Co., Buffalo, is taking bids for the erection of a car shop, 40 x 180 ft., at its plant at William Street, Fillmore Avenue and the New York Central Railroad.

The S-T Engineering Corporation, capitalized at $100,000, has been incorporated at Buffalo by W. B. Powell, H. H. Leonard, and H. J. Turner, 209 Morris Avenue, to manufacture machinery and mechanical devices.

Contract has been awarded by the Falconer Iron Works, Falconer, N. Y., for the erection of an addition, 40 x 120 ft., two stories.

Plans are being prepared for a five-story factory, 70 x 78 ft., to be erected by the Brown-Lipe-Chapin Co., manufacturer of gears, 110 Seneca Street, Syracuse, N. Y.

Contract has been let by the Art Metal Co., Erie, Pa., for an addition, 120 x 166 ft., one-story, to cost $40,000.

The Corporation Pattern Co., Rochester, has been incorporated to manufacture mechanical pattern specialties. George J. Fink and William H. Kramer are the organizers.

The Syracuse Auto Specialty Co., Syracuse, N. Y., has been incorporated with a capital of $25,000 by G. M. Blackman, G. E. Scherrer and J. M. Griswold, to manufacture automobile parts, equipment, etc.

The Rochester Folding Box Co., manufacturer of fiber, corrugated and other type boxes and containers, Elizabeth, Avenue, Rochester, N. Y., has arranged for the immediate erection of an addition to its plant, estimated to cost, with equipment, about $300,000.

The Durston Gear Co., 213 Maltbie Street, Syracuse, N. Y., has arranged for the immediate erection of a two-story addition, 75 x 200 ft., on Leavenworth Avenue, to cost about $15,000.

The Interlocking Reinforced Concrete Corporation, Buffalo, has been incorporated with an active capital stock of $43,000 by J. A. Grass, Alex. M. Bellony and Richard W. Caudell, to manufacture steel interlocking reinforcement bars, etc.

The Niagara Aircraft Co., Niagara Falls, N. Y., has been incorporated with a capital of $50,000 by G. G. Shepard,

E. P. Pfohl and E. D. Davis to manufacture aeroplanes and other aircraft.

The Erie Forge & Steel Co., Erie, Pa., has purchased the plant in Erie built and operated by that company during the war for the Navy Department for the manufacture of guns and other equipment. It is affiliated with the Erie Forge Co., being under the same management, and includes an open-hearth plant, forge shop, machine shop and heat-treating department.

New England

BOSTON, Sept. 8.

New England metal-working manufacturers find conditions healthy except for labor unrest caused by demands for higher wages and for better jobs by returned soldiers.

Railroad yards are reported filled with cars and parts waiting to be repaired. The Rutland Railroad has just bought tools and lists of inquiry are out from the Bangor & Aroostook, and the New Haven.

The American Steel & Wire Co. has bought $50,000 worth of machine tools for its New England plant. A recent inquiry from a leading manufacturer near Boston for tools to the value of $40,000, was later withdrawn.

With the dealers there is a slight slackening of business which they attribute to the season, the last week of August and the Labor Day period being proverbially dull. Cooler weather is expected to develop more demand.

The upward trend of machinery prices has placed some machines higher than ever before. One manufacturer of sensitive drilling machines has added a flat 25 per cent to the prices which prevailed in the war for certain machines. The feeling in the trade is that nothing was gained by the decrease in prices following armistice, and higher costs now make advances necessary.

The mill supply business is good.

The Metlyat Co., Worcester, Mass., has opened offices in the Park building, and is seeking factory space in which it will manufacture model yachts, using zinc as the material. The intention is to build scientifically correct models, instead of the usual toys. The officers are: President F. S. Dart; vice-president and production manager, C. A. Hales; treasurer, A. W. Pratt; secretary, R. W. Rambo; financial secretary, C. D. Tripolitis.

The business of the Central Autogenous Welding Co., Worcester, has been moved to the company's new building at 110-114 Union street.

Landers, Frary & Clark, New Britain, Conn., manufacturers of electric heating and cooking appliances, metal products, etc., are taking bids for the construction of a six-story addition, 50 x 160 ft.

The Bridgeport Castings Co., Bridgeport, Conn., has been incorporated with a capital stock of $100,000 by H. B. Houghton and T. R. Good, Bridgeport; and E. P. Quinn, Torrington, Conn., to manufacture iron and other metal castings.

A new power plant, 30 x 40 ft., will be erected by the New England Silk Co., Westerly, R. I., in connection with an addition to its works to cost about $150,000.

The American Tap & Die Corporation, Greenfield, Mass., has arranged for the immediate erection of a one and two-story addition to cost about $35,000.

The Rhode Island Machine & Tool Co., Woonsocket, R. I., has been incorporated with a capital stock of $100,000 by Wilfrid, Raymond P., and Arthur A. Jacques, and H. Eugene Getchell, to manufacture machinery and tools.

The Ball Bearing Shade Roller Co., Naugatuck, Conn., has filed notice of change of name to the Salem Mfg. Co.

The Compressed Shafting Co., 393 Dorchester Avenue, South Boston, Mass., has taken bids for the erection of a new one-story machine shop, 60 x 320 ft., on Hyde Park Avenue, Hyde Park.

The Duckworth Chain & Mfg. Co., Mill Street, Springfield, Mass., has completed plans for the erection of a brick and concrete addition, 50 x 120 ft.

H. W. McLarren, Cypress and Fulton streets, Springfield, Mass., is planning for the erection of a new one-story machine shop, 65 x 75 ft., to cost about $25,000 with equipment.

E. L. McDermott, New Haven, Conn., for many years with the New England Iron Works of that city, and James M. McDermott, have organized the McDermott Iron Works. The new organization has acquired the property and business of John Spargo, Commerce and Hill streets, and will establish an iron-working plant, specializing in forge work, structural and ornamental iron specialties, and other products. Adjoining property has also been leased to provide increased facilities.

The Bridgeport Hardware Co., Bridgeport, Conn., has taken bids for the erection of a two-story top addition, 20 x 180 ft., on Iranistan Avenue.

The Coppus Engineering & Equipment Co., Park Avenue, Worcester, Mass., manufacturer of pumps, turbine blowers and kindred products, is planning for the erection of a one-story addition to be used as a foundry. With equipment it is estimated to cost about $75,000.

The Hart & Cooley Co., Inc., New Britain, Conn., manufacturer of heating registers and other iron and metal products, has increased its capital by $50,000, making a total outstanding stock of $550,000.

The Charter Oak Machine Co., 438 Asylum Street, Hartford, Conn., recently incorporated to manufacture machinery and parts, has been organized with A. L. Beauchene, president and treasurer; Frank Johnston, vice-president; and W. J. Gengrass, secretary.

The Leland Gifford Co., 1025 Southbridge Street, Worcester, Mass., manufacturer of machinery and parts, has arranged for the erection of a new two-story plant, to cost about $50,000.

The Silver City Rubber Co., Meriden, Conn., has been incorporated with a capital of $10,000 by F. A. Ferguson, Meriden; S. T. Whitaker and E. J. Todd, New Haven, to manufacture rubber specialties.

The Fuller Brush Co., Hartford, Conn., has filed plans for the erection of an addition to its plant on Collins Street to cost about $17,300.

Philadelphia

PHILADELPHIA, Sept. 9.

Machine-tool demand has fallen off somewhat in the past week or two, but sellers are very well satisfied with the business done in August, which ordinarily is a quiet month. Some dealers report that many of their principals have a fair amount of business on hand, and deliveries show some extensions of time.

Since the advance in prices of lathes there have been few other changes in the quotations of machine-tool builders, but a further advance of from 10 to 20 per cent covering many lines of tools is expected. Machinery manufacturers are forced to do this, it is stated, on account of advancing costs of labor. Machine-tool prices are expected to go back about to the level which prevailed during the war. The cost of machine tools under present labor conditions is from 60 to 80 per cent for labor and from 20 to 40 per cent for material. In many instances at the close of the war builders reduced their prices, believing that labor would drop at least 25 per cent. However, instead of labor costs declining they have steadily advanced and hours of work have been shortened in foundries and machine shops. Some higher prices are expected to go into effect about Sept. 15 or Oct. 1.

There has been a particularly good demand of late for automatic machinery, this no doubt being a reflection of the shortage of skilled labor. Medium sized lathes, Nos. 2 and 3 milling machines, horizontal and vertical boring mills and turret lathes have also been in very good demand.

The principal buying in this market during the past two weeks has been done by the Baldwin Locomotive Works, which purchased, in addition to 16 cranes, reported in a previous issue of THE IRON AGE, about $50,000 worth of machine tools for its new cylinder shop. Otherwise buying has been mainly in scattered small lots.

The Electric Storage Battery Co., Nineteenth and Allegheny streets, Philadelphia, has filed plans for the erection of a one-story addition to its plant, 32 x 97 ft., at Nineteenth and Willard streets, to cost about $14,000.

The Ordnance Department is taking bids for the erection of three new brick and steel buildings at the Frankford Arsenal, Philadelphia, to cost about $250,000. The structures will consist of a shell works, 100 x 180 ft.; case works, 100 x 375 ft.; and forge shop, 100 x 200 ft.

The Hale & Kilburn Corporation, Eighteenth and Lehigh streets, Philadelphia, has arranged for the immediate erection of a five-story addition to its plant, 196 x 260 ft., to cost about $100,000. The company manufactures iron and steel products, including automobile specialties, car seats, etc.

The T. S. Johnson Sons Co., 622 Cherry Street, Philadelphia, manufacturer of roofing and other metal products, is taking bids for the erection of a two-story shop addition, 44 x 50 ft.

The Kensington Copper & Machine Works, Philadelphia, has filed plans for the erection of a one-story, brick shop, 48 x 100 ft., at Richmond and Westmoreland streets, to cost about $6,000.

Thomas Mills & Brother, Inc., Eighth and Thompson streets, Philadelphia, manufacturer of tools for bakers' and confectioners' use, has filed plans for the erection of a two-story addition, 21 x 24 ft.

Philip S. Malickson & Co., 1433 Vine Street, Philadelphia,

manufacturers of automobile tires, have filed plans for the erection of a two-story brick addition to their factory at 3009 Chestnut Street, 41 x 94 ft., to cost about $14,000.

A one-story boiler plant to cost about $14 000 will be erected by the Caledonian Dye Works, Emerald and Westmoreland streets, Philadelphia, at its plant at Cornwall and Emerald streets.

The Penn Rivet Corporation, Eleventh and Cambria streets, Philadelphia, has acquired the five-story industrial building, on lot 111 x 150 ft., at the corner of Third and Huntingdon streets, to be used in connection with its works.

The Auto-Motive Service Co., Camden, N. J., has been incorporated with a capital of $125,000 by George Santos, Henry Denzler and Garfield Taylor, to manufacture motors, parts, etc.

The K. & G. Engineering Co., Camden, N. J., has been incorporated with a capital of $25,000 by William and Charles Keufer, Camden; and B. A. Apiberg, Collingswood, N. J., to manufacture pipe, and plumbing supplies.

The Trenton Malleable Iron Co., New York Avenue, Trenton, N. J., is having plans prepared for the erection of a new boiler and power plant, one-story, 40 x 60 ft.

The former plant of Charles W. Carll's Sons, West Front and South Warren streets, Trenton, N. J., manufacturers of sheet metal products, roofing, etc., will be occupied by the Hearnen Storage Battery Co. The Carll company has commenced the erection of a new plant on Cole Street, near Linwood Avenue, to comprise a main manufacturing plant and office. It is planning to remove to the new location as soon as the structure is ready for occupancy.

The York Body Corporation, Belvidere and Linden streets, York, Pa., manufacturer of automobile bodies, has awarded a contract to George W. Gilbert, Mason Street, for the erection of a new four-story and basement works, 72 x 106 ft., to cost about $35,000.

The United Auto Products Co., Wilkes-Barre, Pa., has been incorporated with a capital of $10,000 to manufacture automobile parts, equipment, etc. Edgar A. Conroy heads the company

The Carbondale Machine Co., Carbondale, Pa., has awarded a contract to the Hughes-Foulkrod Co., Commonwealth Building, Philadelphia, for the erection of a new one-story machine shop, 80 x 220 ft., to cost about $60,000, including equipment.

The E. & G. Brooke Iron Co., Birdsboro, Pa., is planning for the resumption of operations at its cut-nail works. This branch of the company's plant has been idle for several years.

The automobile department of the Nuss Mfg. Co., Eleventh and Mulberry streets, Harrisburg, Pa., and the Auto Radiator Co., 125 Cameron Street, have been merged under the name of the Auto Radiator Service Co. The new organization will occupy a building recently completed at Cameron and Mulberry streets, and will install equipment for radiator manufacture and repair, fender manufacture, body repair work, gas tanks, etc. E. L. Sherman, formerly manager of the Auto Radiator Co., will be in charge.

Mechanical and electrical machinery will be installed in the new sewerage disposal plant to be constructed by the Borough Council, Morrisville, Pa., at an estimated cost of about $200,000. Thomas F. Bovie, engineer, will prepare plans and specifications.

The Atlas Powder Co., 120 Broadway, New York, with plants at Tamaqua, Pa., and other points, has acquired the works of the Tamaqua Mfg. Co., East Broad Street, Tamaqua, manufacturer of machinery and parts. The company has arranged for immediate occupancy, and will confine its operations for the present to the manufacture of mining machinery, machinery of other type, parts, etc., for the different plants of the company. It is said that at a later date the present works will be enlarged.

Baltimore

BALTIMORE, Sept. 8.

The Boyden Co-ordinating Corporation, Keyser Building, Baltimore, plans to establish nine plants in the United States and one in Canada for the manufacture of a co-ordinating car truck invented by John C. Boyden and George A. Boyden, Jr., who have been granted patents.

The Baltimore Tube Co., Wicomico and Ostend streets, Baltimore, contemplates the construction of a two-story addition to be used as a milling plant.

The Bostwick-Lyon Bronze Co., Waynesboro, Pa., is reported to have purchased the branch plant of the National Supply Co., Hagerstown, Md., which it will use as a brass foundry.

The Kelly-Springfield Tire Co., Akron, Ohio, has awarded contract for the erection of the complete plant at Cumberland, Md., aside from the operating machinery, to the Hankin-Conkey Co., Cleveland. The entire plant is estimated to cost several million dollars.

Charles E. Waddell, consulting engineer, Asheville, N. C., wants quotations on second-hand steam locomotive cranes with 40-ft. beam equipped with clamshell bucket.

The Lanham Cotton Cultivator Co., Atlanta, Ga., has been organized and plans to establish machine shops and other buildings for the manufacture of cotton cultivators. Calvin Tichenor, Empire Building, is president and general manager.

The Southern Pine & Hardwood Co., Alston Building, Birmingham, Ala., is interested in prices on second-hand, 20 to 35-hp. portable engines and boilers.

Goldenberg Brothers, 717 North Gay Street, Baltimore, dealers in gas and electric fixtures, have acquired additional property and plan to manufacture these goods.

The Baltimore Gas Appliance & Mfg. Co., Bayard and Hamburg streets, Baltimore, has arranged for the immediate erection of a one-story addition, 25 x 133 ft., to cost about $10,000. H. W. Hunter is president.

The Baltimore County Water & Electric Co., 100 West Fayette Street, Baltimore, is planning for the immediate construction of a new one-story pumping plant at Towson, Md., to cost about $15,000.

The Inner Expansion Piston Ring Co., Washington, D. C., has been incorporated in Delaware with capital of $100,000 by W. J. and Robert W. McGinnis, and Henry M. T. Cunningham, to manufacture piston rings and kindred products.

The Backus Motor Co., Baltimore, has acquired property on North Avenue, between Charles and St. Paul streets, from the Colonial Motor Co., for a consideration of about $100,000. The site, 100 x 200 ft., will be used for the erection of a two-story automobile service works and repair shop, to cost about $50,000.

The Security Signal Sales Corporation, 206 West Tenth Street, Wilmington, Del., affiliated with the Security Auto Theft Signal System, Inc., Los Angeles, Cal., is considering the erection of a local plant for the manufacture of special signal systems similar to those being produced at Los Angeles. The device consists of a metal tag, with handle of chilled steel and locking mechanism that cannot be broken. E. F. Edelbroch is president and manager.

The Atlantic Marl, Lime & Fertilizer Co., Newbern, N. C., recently organized, is planning for the construction of a fertilizer plant with initial daily capacity of about 100 tons, estimated to cost $30,000. Walter West is president, and A. L. Freeman, treasurer and manager.

The Congaree Motor Truck Co., Columbia, S. C., has been incorporated with a capital of $25,000 by Stanmore Watson, E. W. and W. P. Pike, to manufacture motor truck parts and accessories.

The Tower-Binford Electric & Mfg. Co., Fourth and Cary streets, Richmond, Va., is planning for the erection of a new one-story building, 90 x 116 ft., for the manufacture of electrical fixtures. It is estimated to cost about $35,000.

Chicago

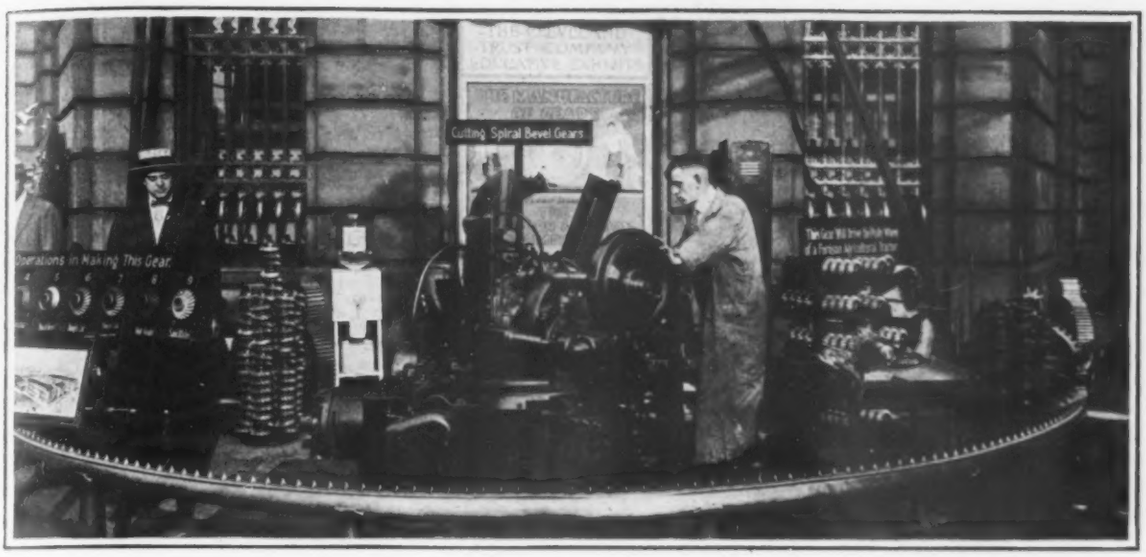
CHICAGO, Sept. 8.

Business continues to develop in good volume, most orders being for small lots. The tractor industry, temporarily at least, is an exception to the rule. The General Motors Corporation has closed for considerable equipment in addition to that previously ordered for its Samson tractor plant at Janesville, Wis. Its purchases of presses alone totaled $80,000. The Moline Plow Co. is about to place tool room equipment and will later close for production tools to replace the machinery lost in its Universal tractor plant recently destroyed by fire.

Although orders for from one to three machines predominate, some of these are for high-priced tools. One dealer, for instance, recently made a $12,500 sale involving but two machines,—a vertical milling machine and a squaring shears. There are few lists before the trade. The Corn Products Refining Co., which recently issued an inquiry for equipment to be installed in an Eastern plant, as mentioned in this column a week ago, has so far closed for a milling machine, a 60-in. boring mill and a pipe machine. The Brokaw Eden Mfg. Co., manufacturer of washing machines, Alton, Ill., has purchased two milling machines and a Natco drilling machine, and expects to order additional equipment. The Atchison, Topeka & Santa Fe Railroad is in the market for two turret lathes, one heavy duty locomotive frame planer, one portable bolt lathe and three 16-in. heavy duty crank shapers. The Woodstock Typewriter Co., Woodstock, Ill., is inquiring for additional equipment needed to effect an increase in output from 50 to 200 machines a day.

A maker of punch presses has advanced prices 10 per cent and a manufacturer of milling machines has raised quotations from 10 to 15 per cent. Deliveries are becoming increasingly troublesome.

Permits were taken out in Chicago in August for 288 buildings, involving an estimated cost of $1,960,400, or by



For exhibition and demonstration of their products, the Cleveland Trust Co., Cleveland, has offered for the use of Cleveland manufacturers space adjoining its main building at the corner of East Ninth Street and Euclid Avenue, that city. That advantage is being taken of this opportunity is attested by the above reproduction of a photograph of a recent exhibit of the Van Dorn & Dutton Co. A Gleason style, double-gear, generating machine was shown in actual operation, cutting gears from forged steel blanks. Another exhibit at this corner was that of the Van Dorn Electric Tool Co. All parts of a portable electric drill, ready for assembly, were shown, and two workmen demonstrated the tool by drilling holes of various sizes in plates of different thicknesses.

far the smallest total for that month in 10 years. The decline in building is attributable to the building trades lockout which has been in effect most of the summer.

The Wahl Co., manufacturer of adding machines, 1800 Roscoe Street, Chicago, has awarded contract of R. C. Wieboldt for the construction of a five-story addition, 125 x 300 ft., to cost $450,000.

The Knight Light & Soda Fountain Co., 351 West Chicago Avenue, Chicago, has awarded contract for the construction of a three-story building, 77 x 210 ft., and a one-story building, 163 x 198 ft., at the northeast corner of North Kildare and Schubert avenues, to cost $150,000.

The Western Electric Co., Chicago, contemplates a $5,000,000 addition to its present Hawthorne plant, according to a recent announcement credited to its officers.

The Paris Mfg. & Engraving Co., Paris, Ill., has been incorporated with $30,000 capital stock to manufacture automobile parts. The incorporators include Horace Link, R. S. Lloyd and Alan Jay Parrish.

The Rock Island Brake Shoe & Foundry Co., Rock Island, Ill., has been incorporated with $200,000 capital stock by Simon Lewis, Hyman Lewis and M. I. Morris.

The Voss Brothers Mfg. Co., manufacturer of agricultural implements, Davenport, Iowa, which recently announced the contemplated erection of a new four-story plant, has purchased a site from the Kohrs Packing Co., and will commence construction work within 30 days.

The Huffman Brothers Motor Co., Elkhart, Ind., has broken ground for a $200,000 manufacturing and assembling plant.

Leroy M. Cline and Peter F. Emmert, Lebanon, Ind., have organized a company to manufacture automobile truck cabs and tops and to do general machine repair work.

The Moore Plow & Implement Co., Greenville, Mich., has increased its capital stock from $75,000 to $200,000.

The Allsteel Equipment Co., Aurora, Ill., is having plans prepared for the erection of a one-story addition, 80 x 100 ft.

The coal tipple and surface equipment at the Springside mine of the Smith-Lohr Coal Mining Co., Pana, Ill., were destroyed by fire, Aug. 30, with loss estimated at about $100,000.

The Super-Power Piston Ring Co., Chicago, Ill., is planning to erect a building for the manufacture of piston rings and allied products. J. F. Selb, general manager Modern Die & Plate Press Mfg. Co., Chicago, heads the company.

The Donald-Butters Aeroplane Co., Minneapolis, Minn., manufacturer of aircraft, has filed notice of change of name to the Security Aircraft Co., at the same time increasing its capital from $50,000 to $100,000.

The Auto Specialty Mfg. Co., St. Joseph, Mich., manufacturer of automobile equipment, has completed plans for the erection of four new buildings at its plant, each one story, and estimated to cost about $100,000, including equipment. Tweedale & Weiss, 53 West Jackson Boulevard, Chicago, are the architects.

Pittsburgh

PITTSBURGH, Sept. 8.

Fire, Aug. 28, destroyed the pattern shop at the plant of the Springfield Foundry Co., 3207 Smallman Street, Pittsburgh, and an adjoining building of the Pittsburgh Malleable Iron Co., with total loss estimated at $20,000.

The Grant Garage Co., Pittsburgh, has leased property at First Avenue and Grant Street, 74 x 140 ft., and is having plans drawn for a new repair shop and automobile service works to cover the entire site. The structure with equipment is estimated to cost close to $100,000. C. J. Rieger, Pittsburgh, is the architect.

The West Virginia Metallic Railway Tie Co., Inc., Clarksburg, W. Va., has been incorporated with a capital of $25,000 by Joseph Marra, and associates, to manufacture metal railroad ties and other railroad products.

The Crucible Steel Co. of America, Pittsburgh, has postponed, until after the first of the year, the erection of the proposed new building at its works at Midland, Pa., bids for which were recently asked.

The Waverly Oil Works, Fifty-fourth Street and Avenue R Pittsburgh, has awarded a contract to D. T. Riffle, 1402 Keenan Building, for the erection of a six-story and basement addition to its refining plant, 71 x 81 ft., at Fifty-fourth Street and the Allegheny Valley Railroad, to cost about $125,000. D. E. Weir is president.

The Susquehanna Collieries Co., Lykens, Pa., is planning for the complete electrification of its properties at Williamstown and Lykens, with the sinking of a new shaft at Big Lick, between Lykens and Wiconisco. The work, including machinery and equipment, is estimated to cost about $2,000,000.

The Wheeling Stamping Co., Wheeling, W. Va., manufacturer of stamped metal specialties, has awarded a contract to R. R. Kitchen & Co., Wheeling, for extensions and improvements in an existing building for increased operations, to cost about $29,000.

Cleveland

CLEVELAND, Sept. 9.

The General Motors Corporation is purchasing machinery for its Walkerville, Ont., plant, the requirements for which, it is reported, will aggregate from $2,000,000 to $2,500,000. Considerable inquiry pending in Akron from the automobile tire and rim industry is still held up as a result of the machinists' strike in that city. Local machine tool dealers are doing a good volume of business in numerous small orders, which are coming from widely scattered sources, buying not being limited to the automobile field to the extent that it has been for some time. Deliveries on some lines of machines are becoming more extended and one Eastern manufacturer is not promising shipments until next August on some equipment. That is an extreme case, however. Some

machine-tool builders are making shipments from stock and their production is keeping up with sales. Some planer manufacturers are not promising deliveries before December.

The Goodyear Tire & Rubber Co., Akron, Ohio, has issued the following list of machinery, aggregating about $45,000, for its new plant at Los Angeles, Cal.:

One horizontal milling machine.
One No. 3 vertical milling machine.
One 20-in. shaper.
One 4-ft. radial drill.
One 20-in. drill press.
One 24-in. drill press.
One 14-in. single spindle high speed drill press.
One 1½-in. bolt machine.
One 12-in. hack saw.
One 24-in. engine lathe, 8 ft. bed.
One 30-in. engine lathe, 10 ft. between centers.
One 36-in. vertical turret lathe.
Two 62-in. boring mills.
One universal cutter and tool grinder.
One 42-in. x 42-in. x 16-ft. planer.
One portable key seater.

The Cleveland Tractor Co., Cleveland, has placed contract for a one-story brick and steel building, 182 x 440 ft., of the saw tooth type, to be used as an engine shop, and for another structure, 90 x 190 ft., two stories and basement, to be used as a heat treating department. George S. Rider & Co. are the engineers.

The Geometric Stamping Co., Cleveland, plans the erection of a factory, 31 x 79 ft.

The McElrath Tire & Rubber Co., Cleveland, announces that it will build a new plant in Ravenna, Ohio. R. Paul McElrath is president and Miles E. Evans is secretary.

The Lorain Steel Stamping Co., Lorain, Ohio, has been organized with a capital stock of $100,000 and will build a plant at Broadway and Thirty-fifth Street, for the manufacture of steel stampings. Joseph Gould is president; A. Bregman, general manager, and Alexander Ogfield, vice-president and treasurer.

The Sandusky Mfg. Co., Sandusky, Ohio, has purchased the Vim Motor plant in that city, and will install equipment for the manufacture of automobile rims.

The Fremont Motor Corporation has been organized with a capital stock of $2,000,000 to operate the Burford plant at Fremont, Ohio. It is stated that passenger cars and motor trucks will be made.

The McCarthy Drill & Tool Corporation, Toledo, Ohio, has been purchased by the Fastfeed Drill & Tool Corporation, which was recently organized in New York with a capitalization of $500,000. The concern will continue to operate the Toledo plant and will specialize in the manufacture of high-speed tools.

Detroit

DETROIT, Sept. 8.

According to manufacturers, Detroit is facing the worst freight car shortage since that of the winter preceding the entry of the United States into the war. The shortage is greatest in automobile cars, but shippers complain of a dearth of all classes of equipment. All agree that the situation presents elements which might bring serious loss to the manufacturers. The grain and cotton crop movements, the relaxation of Government control of car movements, which during the war kept a supply of freight cars in this section to move war materials, and the run-down condition of the railroads, have combined to create the shortage, which, with the enlarged and diffused peace-time production, strikes and the competition of European countries for raw materials, has reduced virtually every plant to a hand-to-mouth basis of materials supply. It has also curtailed facilities for shipping finished products.

There is a shortage of castings, owing to strikes in foundries throughout the State, and several factories have been experiencing difficulty in obtaining motor car axles, also owing to strikes.

The steel market is showing a tendency to tighten up, and plants are beginning to call on warehouses for material such as hitherto has been purchased direct from the mills. Labor shortage in the copper mining districts of Michigan points toward a shortage of copper.

With winter and its added railroad difficulties less than three months away, with skilled labor scarce and market conditions what they are, manufacturers in many instances view with apprehension their ability to fill orders on schedule.

The Lansing Tool & Stamping Co., Lansing, Mich., expects to erect an addition that will double its capacity, and be a duplication of the first unit, which was completed just before the war. It will provide 12,000 sq. ft. of floor space, and with equipment will cost about $50,000. It is hoped to have the building finished by the end of October. The company has enough orders ahead to keep it running at capacity until next June.

The Machine Specialty Co., Ann Arbor, Mich., has been reorganized and the capital stock increased from $10,000 to $135,000. It is planned shortly to start on the erection of a new plant. Considerable new equipment has been added recently. It is expected to expand the business and piston pins and automobile parts generally will be made a specialty from now on.

The Detroit Transmission Co., Detroit, which was organized last June, is getting into production of Power-Rite, a transmission said to eliminate the old-fashioned gear-shift, thus obviating stripped and broken gears. The plant is at the foot of Lycaste Avenue, is two stories, has a floor space of 33,000 sq. ft., and will have a capacity of 300 transmissions a day. Additional ground has been acquired, which will enable the company to erect extensions to bring the capacity to 2000 a day. Lewis J. McSweeney, vice-president and general manager American Lubricator Co. is in charge of manufacturing. The capital stock is $500,000.

The Northern Wheel Co., Alma, Mich., has been organized with a capital stock of $1,000,000. The officers are A. D. Smith, president; J. W. Blakely, vice-president; Orville Allen, secretary, and Ezra L. Smith, treasurer.

The Detroit Spark Plug Mfg. Co., Detroit, has been organized by Philip E. Moody, Chauncey P. Watson and Paul B. Moody, with a capital stock of $10,000. Spark plugs and accessories for automobiles will be manufactured.

The Champion Ignition Co., Flint, Mich., will expend $1,00,000 for additions, machine tool equipment and other extensions. Present production is said to be about 80,000 spark plugs a day, which is expected to be increased to about 200,000 a day. The feature of the new plant will be the establishment of a continuous assembly system, along the lines of the Ford Motor Co.

The Peninsular Brass Works, Detroit, having outgrown its present factory, has purchased property at West Warren and Walton Avenues, and is erecting a new plant of brick, steel and concrete, which will have about 150 per cent greater capacity than the old one. The product of the company is air cocks, priming cups, stove cocks, boiler trimmings, etc. A. W. Fussey is president, and P. E. Welton secretary and treasurer.

St. Louis

ST. LOUIS, Sept. 8.

The Inland Machine Co., St. Louis, through its president, John Flammang, has purchased 108 ft. fronting on the south side of North Market Street, between Glasgow and Garrison avenues, and will start work at once on the construction of a brick building covering the entire area. When completed the structure will be occupied by the Ordnance Tool Co., whose capacity will be tripled.

The Bradford-Parsons Co., Jennings, La., W. H. Bradford, Elton, La., president, will equip a plant for the manufacture of farming implements.

The Gum Cove Oil & Refining Co., Vinton, La., C. L. Barrett general manager, capital stock $1,000,000, will equip an oil refinery, the first unit to have a daily capacity of 1000 bbl.

The Oneta Refining Co., Tulsa, Okla., has increased its capital stock by $250,000 to enlarge its capacity.

The Sinclair Consolidation Oil Corporation, 120 Broadway, New York, will consolidate all the Sinclair oil interests and increase its total refining capacity to 100,000 bbl. per day, install pipe line systems from the fields to East Chicago, Ill., and add other equipment to render operations more efficient.

The Tulsa Auto Mfg. Co., Oklahoma and Wheeling streets, Tulsa, Okla., R. O. Holleron manager, will install equipment for a $500,000 plant to manufacture automobiles.

The International Shipbuilding Co., Pascagoula, Miss., has plans for doubling the capacity of its plant.

Maryville, Mo., A. D. Hewitt clerk, will install two 600 gal. per min. motor-driven centrifugal pumps, one 700 gal. per min. low service pump and other equipment. E. E. Harper, Kansas City, Mo., is engineer.

The Premier Tire & Rubber Co., Kansas City, Mo., is in the market for motors, transformers, hydraulic boiler feed pumps, air compressors, mills, presses, gages, buffers, etc. L. E. McKenna is manager.

The Curtiss Southwest Airplane Co., Tulsa, Okla., manufacturer of aircraft, a Delaware corporation, has increased its capital from $10,000 to $200,000.

Milwaukee

MILWAUKEE, Sept. 8.

The first week of September has developed an unusual amount of single tool and small-lot business. The past month is reported by local tool builders as the best on record since November. Milling machine manufacturers say that the Central Western States, notably the Chicago and Milwaukee districts, are producing a rather surprising volume of new business. The largest lots, however, rarely exceed five machines at a time. The automotive industries continue the heaviest buyers, although the sources of demand are growing more diversified than at any time since the close of the war.

The Nash Motors Co., Kenosha, Wis., which is about to establish a branch factory in Milwaukee, has purchased land aggregating nearly 46 acres, with a frontage of 811 ft. on Clement Avenue, and bounded by the main line and the Milwaukee belt line of the Chicago & Northwestern Railroad, south of Oklahoma Avenue. Charles W. Nash, president of the company, states that work will begin shortly after Sept. 15 on the erection of a factory for producing passenger automobiles, which ultimately will represent an investment of $3,500,000 and provide employment for 4000 workers. A four-cylinder touring car will be manufactured and the layout is on the basis of a daily output of 100 machines, with facilities for a maximum production of 200 machines a day. Detailed specifications are in preparation and will be ready in a week or 10 days. The first units will consist of a machine shop, an assembling floor, and a boiler house. For the present, electric current for the operation will be derived from the Milwaukee Electric Railway & Light Co. It is stated that the main works in Kenosha will be continued in full operation, being devoted to the manufacture of six-cylinder passenger cars and motor trucks.

The James Mfg. Co., Fort Atkinson, Wis., manufacturer of steel stanchions and other barn and farm equipment, will build an addition, embracing a complete foundry unit, at an estimated cost of $200,000. Plans are being prepared for a one-story brick and steel extension, 150 x 400 ft. Much additional machinery, electric traveling crane, and other equipment will be required. J. G. Shodron is works manager.

The Koehring Machine Co., Milwaukee, manufacturer of gas-powered concrete mixers and paving machines, will build a new three-story erecting shop and office building, 73 x 327 ft., and a one-story addition to the machine shop, 60 x 118 ft. The cost of the buildings, exclusive of equipment, is $95,000 and $12,000, respectively.

The Racine Rubber Co., Racine, Wis., affiliated with the Ajax Rubber Co., Trenton, N. J., has awarded contracts for the erection of a four-story addition, 80 x 160 ft., which will cost $100,000. The architect is Edmund B. Funston and the general contractor, Nelson & Co., Racine. New power, electric motor and tire manufacturing equipment is being purchased. Stuart H. Webster is vice-president and general manager.

The Pan-American Rubber Co., 701 Grand Avenue, Milwaukee, with factory at Cudahy, has acquired the plant of the former Wiens Brush Co., Watertown, Wis., and will move its equipment to that city. The factory is being remodeled and an addition to increase the floor space about 50 per cent will be erected within a short time. The company has an authorized capital stock of $250,000 and makes porous rubber inner tires for heavy duty vehicles.

The American Electric Motor Co., Milwaukee, has been organized with a capital stock of $175,000 to manufacture electric motors and appliances. The incorporators are Carl L. Daum, Walter N. Sprinkmann and Harry B. Mortimer, all of Milwaukee.

The Lawson Aircraft Co., 522 First National Bank Building, Milwaukee, is contemplating the erection of a complete factory and assembling plant at New Butler, the main building to be 200 x 300 ft., of brick and steel. The company was incorporated some time ago with $1,000,000 capital stock.

The Continental Axle Co., Edgerton, Wis., organized to take over the equipment and business of the Higgins Spring & Axle Co., Racine, Wis., has filed articles of incorporation. The capital stock consists of $200,000 of preferred and 3600 shares of non-valued common shares. The incorporators are Andrew McIntosh, B. O. Wilson and G. W. Doty. The first unit of the new plant is now under construction at Edgerton.

The Robert A. Johnston Co., 270 Florida Street, Milwaukee, which has started work on a new seven-story factory, 225 x 275 ft., at Thirty-fourth and National avenues, is ready for bids for the erection of a steam generating plant, to embrace also a private garage and machine shop, 120 x 185 ft., one story. Bids are being taken by Herman J. Esser, architect, 402 Camp Building. The entire project involves an investment of more than $750,000.

The Latex Tire Co., Fond du Lac, Wis., has broken ground for the first unit of its new plant, to manufacture pneumatic tires and tubes. The first building is 60 x 150 ft., one story, costing $50,000 with machinery. F. S. Dannenberg is president and chief engineer.

The Lohr Auto Co., Hartford, Wis., has purchased a site upon which it will erect a one-story building to be used for repairs and machine work.

The Wisconsin Shipbuilding & Navigation Corporation, 216 West Water Street, Milwaukee, has contracted with McMullen & Pitz, consulting engineers, Manitowoc, Wis., to do preliminary work for the establishment of its proposed new steel shipyard at Kewaunee, Wis. The contract amounts to $75,000. Plans are being prepared for a machine shop, power plant, wood-working shop, office and other buildings. E. T. Thomas is president and chief engineer, and J. W. Barber is secretary.

The Vim Tractor Co., Schleisingerville, Wis., expects to award contracts this week for the erection of a one-story brick, concrete and steel addition, 100 x 200 ft., with sawtooth roof. With new tool and other equipment the improvement will cost $100,000.

Cincinnati

CINCINNATI, Sept. 8.

Information has been received from correspondents in the Scandinavian countries that German makers of portable electric drilling and grinding machines are seeking business. It is stated by one corespondent that the present rate of exchange will make it extremely difficult for American manufacturers to compete in prices with European countries that have re-established trading relations with Germany. In a measure, the same situation confronts makers of machine tools, or is expected to do so at an early date.

Domestic orders for machine tools are still scattered, with now and then some machines bought for shipment to the Pacific Coast. Among nearby customers are farm tractor manufacturers, while the demand from the automobile trade holds up very well. All local plants are busy, but there are very few night shifts at work. A number of large cutting shears have lately been sold to scrap iron dealers in this section. These concerns have also bought a few yard cranes recently.

The Cincinnati Building Commissioner's report for the month of August shows a large increase over the corresponding month of 1918. During August this year 1253 building permits were issued, with improvements estimated at $1,208,485, while in August, 1918, only 936 permits were issued with an estimated valuation of $323,410. In Dayton, Ohio, the increase for August this year over the corresponding period of last year is estimated at 24.5 per cent.

Work on the addition to the plant of the Acme Machine Tool Co., Winton Place, Cincinnati, is now well under way. Installation of equipment in the new addition is expected to be completed before cold weather.

The Board of Education, C. W. Handman business manager, Cincinnati, will open bids Sept. 22 for furnishing and installing machinery and tools in the industrial art shops at the East High Public School.

Estimates are being received for a two-story addition, 70 x 100 ft., to the plant of the Corcoran-Victor Co., Cincinnati, maker of automobile lamps.

E. M. Chace, Union Central Building, Cincinnati, has charge of the engineering work in connection with the construction of an electric lighting plant for the municipality of Lebanon, Ohio. The proposed plant is estimated to cost $120,000.

The E. H. Bardes Range & Foundry Co., Cincinnati, has tentative plans under way for a foundry addition. The company is not ready to consider propositions for equipment for this extension.

The Dayton Fan & Motor Co., Dayton, Ohio, has been incorporated with $700,000 capital stock by E. O. Waymire, C. C. Miner and others. Mention of the company's manufacturing plans has been previously made.

The Master Tire & Rubber Co., Dayton, Ohio, will soon commence work on a six-story brick and reinforced concrete building to have a floor space of 300,000 sq. ft. W. N. Ruston is president and general manager.

The White Cross Auto Repair & Tire Co., Columbus, Ohio, has been incorporated with $25,000 capital stock by E. R. Tweedle and others.

The Thomas & Armstrong Co., London, Ohio, has commenced work on a new sheet metal plant which is expected to be ready for occupancy before Jan. 1. The main building will be 50 x 340 ft., one story. The company manufactures sheet metal specialties.

The George Snyder & Sons Co., Columbus, Ohio, has been

incorporated with $20,000 capital stock, fully paid in. The new company is a continuation of the old partnership of George Snyder & Son, which for the past 20 years has been doing a general roofing and sheet metal business. The principal stockholders are George and G. E. Snyder.

The Central Brass & Fixture Co., Springfield, Ohio, has increased its capital stock to $120,000. No immediate additions to its plant are contemplated.

The Wellston Mfg. Co., Wellston, Ohio, manufacturer of rollers, contemplates erecting an addition to its plant.

The Wadsworth Foundry Co., Wadsworth, Ohio, has increased its capital stock from $15,000 to $100,000.

M. L. Andrew & Co., Cincinnati, makers of wood-working equipment, are having plans prepared for a two-story addition, 56 x 100 ft., to its plant on Colerain Avenue.

Edward E. Ostot, Columbus, Ohio, maker of automobile tops, will erect an addition to his plant on Parsons Avenue.

Texas

AUSTIN, Sept. 6.

The Kyle Light & Power Co., Kyle, has been incorporated with a capital of $7,500. H. B. Jones is a stockholder.

The Occidental Oil Mills Co., Granger, recently incorporated with a capital of $300,000, will build a cotton-seed oil mill. The incorporators are G. D. Sugg, C. C. Kilpatrick and W. E. Tomlison.

The People's Ice Co., Wichita Falls, will construct a new ice plant, to have a daily capacity of 50 tons and a storage capacity of 2500 tons. It will cost about $125,000.

T. M. Cooper, Abilene, will build an oil refinery with a daily capacity of 1200 bbl.

The Mid-Texas Oil & Refining Co., Fort Worth, plans to build a refinery with a daily capacity of 5000 bbl at some point in the central west Texas oil fields. James Manoil, New York, is president of the company.

The Deep Water Refineries, Houston, has purchased a site on the ship channel, near that city, upon which it will build an oil refinery with a daily capacity of 1000 bbl. R. A. Fouts, Chicago, will be general manager.

The Fort Worth Refining Co., Fort Worth, plans to build an oil refinery with a daily capacity of 2000 bbl. Those interested in the enterprise are T. A. Edmonds, Waurika, Okla.; D. C. Nelson and E. A. Patterson, Wichita Falls; W. E. Weathers, Fort Worth, and the Victor Oil Co., Shreveport, La. A site for the proposed plant has been purchased.

Messrs. Wolf & King, Jennings, La., have purchased 37 acres on the ship channel near Houston, upon which they will build an oil refinery with an initial capacity of 1000 bbl. a day.

The Jakehamon Tool Co., Jakehamon, has been incorporated with a capital of $100,000, and will establish a machine shop. E. A. Perry, Coalgate, Okla., is president, and L. A. Parr, Scranton, Pa., is vice-president and general manager.

The Dallas Mfg. Co., Dallas, manufacturer of cotton-ginning and oil machinery, is planning for the construction of a new two-story plant, 100 x 150 ft., estimated to cost with equipment in excess of $100,000. The company was organized several months ago with a capital stock of $1,500 000 and is operating a plant on Elm Street. E. G. Kemper is president.

The National Refineries Co., Fort Worth, recently incorporated with a capital of $10,000,000, is planning for the erection of a new 25,000 bbl. oil refinery in the vicinity of Desdemona. Allan D. Reynolds and Harvey Bryant, both of Los Angeles, are president and secretary, respectively.

The Louisiana Petroleum & Refining Co., Shreveport, La., is considering plans for the construction of a new oil plant on the Houston ship channel, near Galena, Tex. It has a 37-acre site and the initial plant will have a daily capacity of 1000 bbl.

Indianapolis

INDIANAPOLIS, Sept. 8.

The Fairmount Drop Forge Co., Fairmount, Ind., has been incorporated with $100,000 capital stock to manufacture steel, iron and copper products. The directors are John Flanagan, Robert A. Morris and Joseph F. Carmichael.

The Sheridan Cutlery Co., Sheridan, Ind., has been organized with a capital stock of $50,000 and the following officers: President, Theodore Pettijohn; vice-presidents, C. E. Clark and Joseph Vickery; secretary, Maurice Mendenhall, and treasurer, Stephen Hinshaw.

The Logansport Utilities Co., Logansport, Ind., has been incorporated with $60,000 capital stock. The directors are Oliver H. Binns, Frank B. Wilkinson, William R. Casparis, Bert Wilk and William O. Taylor.

The Jasper Novelty Works, Jasper, Ind., has increased its capital stock from $25,000 to $100,000.

The Wheeler Automatic Transmission Co., Indianapolis, has been incorporated with $500,000 capital stock to manufacture an automatic transmission, said to do away with shifting gears in automobiles. The officers are George W. Ray, president; J. M. Milner, secretary-treasurer; William S. Bennett, William L. Brock and William D. Benjamin, directors.

The Supertread Tire Co., South Bend, Ind., has been acquired by new interests. Plans are under way for general expansion, and it is proposed to increase the present capacity.

The Advance-Rumeley Co., Laporte, Ind., manufacturer of threshing and other machinery, has awarded a contract to the Larson & Danielson Co., Laporte, for the erection of an addition to its plant to cost about $100,000.

The Indiana Silo & Tractor Co., Anderson, Ind., is equipping a plant for the manufacture of farm tractors.

The Star Tractor Co., Greensburg, Ind., is erecting an addition to its plant, to be used for the manufacture of automobiles.

The Pacific Coast

SAN FRANCISCO, Sept. 2.

The machine-tool market in this section is spotty. Some days a number of orders and inquiries are booked and on others it appears as if the bottom had dropped out of the demand. There is a good call for machines for garages, but for small tools the demand is only fair. It is said that second-hand machines are regarded with more or less skepticism in this market. This is especially true of those located where they cannot be examined before the purchase price is paid. Some Government machinery is moving, but it is said that the amount bought is not as large as was expected when the Government first began to sell its surplus supplies.

The shipbuilding situation in the Northwest is becoming more tense, as the yards approach the end of the Government program. Whether new contracts will be offered on a satisfactory basis, or that bids will be made for private work, or the plants turned over to other purposes, are questions of the moment. Two yards in Portland refused an offer by the Government of contracts for four 8800-ton steel ships, as the terms were regarded unsatisfactory under present working conditions.

J. G. Teeple and associates are preparing to start a structural shop at Fresno, and will maintain headquarters at 644 Call Bulding, San Francisco. The new concern will handle steel reinforcing bars, wire and general iron and steel building materials. It also intends to build a foundry. Plans for a shop, 60 x 75 ft., have been drawn and also for a warehouse of about the same dimensions. Mr. Teeple is in the market for punches, shears and structural shop equipment.

Bannon, Bodinson, MacIntyre, Inc., 417 Market Street, San Francisco, has plans for a machine shop and warehouse in Oakland, where it will manufacture conveying, elevating and transmission machinery. The company recently closed a contract to represent the Stephens Adamson Mfg. Co., Aurora, Ill.

The Russell & Pugh Lumber Mill, Harrison, Idaho, was completely destroyed by fire recently, with a loss of $100,000.

The Majestic Furnace & Mfg. Co., Seattle, has increased its capital stock to $100,000, the additional $50,000 to be used in constructing a two-story factory on Western Avenue. The present output will be doubled with the installation of new equipment. The company manufactures steel furnaces and does all kinds of sheet metal work.

The Pacific States Motor Truck Co., Seattle, recently incorporated with $300,000 capital stock, will erect a factory at a cost of $45,000 for the manufacture of 3 and 4-ton motor trucks. The building will be two stories, 180 x 60 ft.

The Western Wall Board Co., Seattle, plans the erection of a two-story building, 50 x 100 ft., to cost $20,000, as an addition to its present plant.

The Cost Engine & Machine Works, Portland, has been organized with a capital stock of $10,000 by Sidney Matcovich and C. D. Christensen. It will immediately erect a machine shop.

The Sumner Iron Works, Everett, Wash., T. B. Sumner, President, contemplates enlarging its plant for the manufacture of tractors, manufacturing to begin about Jan. 1. T. B. Sumner is president.

The Oregon Enameling Works, Portland, recently incorporated, will erect a factory. Two ovens of 27 kw. each, and one 16-kw. oven will be included in the initial installation.

The Central South

LOUISVILLE, Sept. 8.

The Ovee Mfg. Co., Louisville, has purchased property at Tenth and Main streets, and will enlarge its plant at a cost of $50,000 for the manufacture of automobile supplies.

The Atlanta Producing & Refining Co., Atlanta, Ga., is in the market for metal tanks in connection with a refinery to be erected at Bowling Green, Ky.

The Embry-Weir Motor Co., Louisville, has purchased a $15,000 piece of property, and will equip a garage and repair shop at a cost of $50,000.

The Frank Fehr Ice & Cold Storage Co., Louisville, contemplates building a cold storage and ice plant on Logan Street to cost $1,000,000.

The Progress Press Brick Co., Andrew Hillenbrand, Jr., general manager, is in the market for a new or second-hand revolving clay pulverizer.

Sam T. Castleman, Louisville, and others have organized the Bowling Green Pipe Line & Refinery Co., which is planning to equip a $300,000 oil refinery at Bowling Green, Ky.

The Riddell Mfg. Co., sheet metal worker, Louisville, has been purchased by J. W. and D. C. DeHart. It specializes in galvanized iron equipment.

The Lexington Engine & Boiler Works, Lexington, Ky., recently increased its capital stock from $10,000 to $20,000.

The Southern Foundry & Mfg. Co., Owensboro, Ky., has increased its capital stock from $400,000 to $450,000.

The Byron Engineering Works, Louisville, O. E. Byron, J. Stoddard Johnson and others interested, is planning to equip a factory to manufacture automobile trailers of 3, 5 and 7-ton capacity.

The Wiley Fertilizer Co., Troy, Ala., is planning to rebuild its works, recently destroyed by fire with loss estimated at about $60,000.

The Martin Tool Holder Co., Jackson, Tenn., has been incorporated with a capital of $100,000 by T. O. Martin, I. A. Rainey and A. R. Sykes.

The Lodge Mfg. Co., South Pittsburg, Tenn., manufacturer of hollow-ware, is planning for the erection of a one-story molding shop addition, 75 x 125 ft.

The South Pittsburg Foundry Co., South Pittsburg, Tenn., manufacturer of soil pipe and kindred specialties, is planning for the erection of a one-story foundry addition, 50 x 200 ft.

Canada

TORONTO, Sept. 8.

Plans are being prepared for the erection of an addition to the machine shop of Tidewater Shipbuilders, Ltd., Three Rivers, Que., to cost $50,000. M. Mapes, Room 401, Windsor Station, Montreal, is the architect.

The Firestone Tire & Rubber Co., Firestone Park, Akron, Ohio, is making arrangements for the erection of a plant at Cornwall, Ont.

The United Portland Cement Co., Ltd., Brantford, Ont., is preparing to build a factory at Lafayette, Ont., to cost about $75,000. Alexander Butcher, Drummond and Darling streets, Brantford, is interested.

A. J. Cromar, 446 Colborne Street, has the general contract for the erection of an addition, to cost $11,000, to the plant of the Brantford Computing Scale Co., 14 Grey Street, Brantford, Ont.

E. G. M. Cape & Co., 10 Cathcart Street, has been awarded the general contract for the erection of foundry buildings for the Montreal Locomotive Works, Ltd., 145 St. James Street, Montreal, to cost $150,000.

The Grand Trunk Pacific Railway, Regina, Sask., will build an electric power plant at Melville, Sask.

The factory owned by the Bishopric Wall Board Co., Bank Street, Ottawa, Ont., was destroyed by fire with a loss of $300,000. It is expected that rebuilding will be started at an early date.

The Live Wire Co., Ltd., Guelph, Ont., has been incorporated with a capital stock of $100,000 by Charles L. Dunbar, Leo W. Goetz, John Sutherland and others to manufacture insulated wire and cables, etc.

John Deagle, Cataract, Ont., is in the market for a cast iron pulley, 18 x 48 in.; 20 to 50 hp., three-phase, 60-cycle motor, and 10 to 15 hp., motor or dynamo, direct current.

Jos. Moody, Krydor, Sask., will build an electric plant at a cost of $30,000 and is interested in material and equipment.

The Windego Power Co., Windego, Ont., is having plans prepared for the erection of a power plant. Sutcliffe & Neelands, New Liskeard, Ont., are the engineers.

OFFICE CHANGES

The Central Steel Co., Detroit, has moved its district sales office into new permanent quarters—1053, 1054 and 1055 Book Building, 35 Washington Boulevard, Detroit.

L. Prior, of the Merrill-Stevens Shipbuilding Corporation, Jacksonville, Fla., and of the Louisiana Shipbuilding Corporation, Slidell, La., near New Orleans, announces the establishment of an office in New York, at 280 Broadway, with Orlanda H. Taylor, as New York representatives of the two companies. The Merrill-Stevens plant's facilities are especially adapted to the construction of standard steel freight vessels up to 10,000 tons dead weight capacity; to oil tankers, refrigerator ships, ferryboats, barges, tugs, etc.; also for the building of boilers and repair jobs. The Louisiana plant makes a specialty of building steel freighters up to 3500 tons dead weight capacity.

The Keller Pneumatic Tool Co., Chicago and Grand Haven, Mich., announces the opening of new branch offices in the following cities: Birmingham, Ala., in the Jefferson County Bank Building, under the management of H. I. Kahn; Salt Lake City, Utah, in the Newhouse Building, under the management of the C. H. Jones Co.; San Francisco, Eccles & Smith Co., main office San Francisco; branch offices at Portland and Los Angeles.

The Dickey Steel Co., Inc., Woolworth Building, New York, has been appointed sales representative for New York and Philadelphia district of the Worcester Pressed Steel Co., Worcester, Mass., manufacturer of hot and cold-rolled strip steel and light and heavy metal stampings.

A Detroit office in the Book Building has been opened by the Jeffrey Mfg. Co., Columbus, Ohio, manufacturer of mining, conveying and crushing machinery and electric locomotives. O. B. Westcott of the sales and engineering construction department has been appointed sales manager.

An office and showroom have been opened by the Sun Machinery Co., New York, at 278 Washington Street, Newark, N. J. A complete line of its metal-working and industrial machinery will be carried.

The LaBelle Iron Works, Steubenville, Ohio, has opened a branch office in the Book building, Detroit, in charge of John O. Tucker as manager of sales of that district.

George Sachsenmaier & Co., Philadelphia, new and used electrical machinery, has moved from 143 North Third Street to 926 North Third Street.

The Huntington, W. Va., district sales office of the Mancha Storage Battery Locomotive Co., St. Louis, manufacturer of electric locomotives, has been moved to room 409, Robson-Pritchard Building. The district manager is C. B. Goodwin.

Harry C. Hess, structural engineer, Philadelphia, has removed his offices from 1631 Chestnut Street to the Fuller Building, 10 South Eighteenth Street.

The Pennsylvania Iron & Steel Products Co., at Ellwood City, Pa., has opened a sales office in the Oliver Building, Pittsburgh, with R. L. Mason as general agent. Mr. Mason is a sales agent of large experience, having had charge of the sales of the Clarke Car Co., Steubing Truck Co. and the Edwards Mfg. Co. The company is specializing in the making of steel barrels, steel drums and sheet metal products.

The Arthur C. Harvey Co., iron and steel jobber, is building a new warehouse at Allston, Mass., which will be completed about March 1. Enough space is being provided for several years' expansion.

Hamilton & Hansell, Inc., Park Row Building, New York, has changed its name to American Transmarine Co., Inc., at the same address.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general headings of "Iron and Steel Markets" and "Metal Markets."

Iron and Soft Steel Bars and Shapes

	Per lb.
Bars:	
Refined iron, base price	3.37c.
Burden's H. B. & S. bar iron, base price	6.10c.
Burden's best bar iron, base price	6.30c.
Swedish bars, base price	20.00c.
Soft Steel:	
¾ to 1⅞ in., round and square	3.37c.
1 to 6 in. x ⅜ to 1 in.	3.37c.
1 to 6 in. x ¼ to 5/16	3.47c.
Rods—⅝ and 11/16	3.42c.
Bands—1½ to 6 x 3/16 to No. 8	4.07c.
Shapes:	
Beams and channels—3 to 15 in.	3.47c.
Angles:	
3 in. x ¼ in. and larger	3.47c.
3 in. x 3/16 in. and ⅛ in.	3.72c.
1½ to 2½ in. x ⅛ in.	3.52c.
1½ x 2¾ in. x 3/16 in. and thicker	3.47c.
1 to 1¼ in. x 3/16 in.	3.52c.
1 to 1¼ in. x ⅛ in.	3.57c.
⅞ x ⅞ x ⅛ in.	3.62c.
¾ x ⅛ in.	3.67c.
⅝ x ⅛ in.	4.07c.
½ x 3/32 in.	5.17c.
Tees:	
1 x ⅛ in.	3.87c.
1¼ in. x 1¼ x 3/16 in.	3.77c.
1½ to 2½ x ¼ in.	3.57c.
1½ to 2½ x 3/16 in.	3.57c.
3 in. and larger	3.52c.

Merchant Steel

	Per lb.
Tire, 1½ x ½ in. and larger	3.37c.
Toe calk, ½ x ⅜ in. and larger	4.25c.
Open-hearth spring steel	6.00c.
Standard cast steel, base price	14.00c.
Extra cast steel	18.00 to 20.00c.
Special cast steel	23.00 to 25.00c.

Tank Plates—Steel

	Per lb.
¼ in. and heavier	3.67c. to 3.92c.

Sheets

Blue Annealed

	Per lb.
No. 8 and 3/16 in.	4.52c.
No. 10	4.57c.
No. 12	4.62c.
No. 14	4.67c.
No. 16	4.77c.

Box Annealed—Black

	Soft Steel C. R., One Pass, per lb.	Wood's Refined, per lb.
Nos. 18 to 20	5.30c. to 5.55c.	——
Nos. 22 and 24	5.35c. to 5.60c.	6.55c.
No. 26	5.40c. to 5.65c.	6.60c.
No. 28	5.50c. to 5.75c.	6.75c.
No. 30	6.00c. to 6.25c.	——

No. 28, 36 in. wide, 10c. higher.

Wood's Keystone Hammered, 18-24 gage, 9¾c.; 26-28 gage, 10¼c.

Galvanized

	Per lb.
No. 14	6.10c. to 6.35c.
No. 16	6.25c. to 6.50c.
Nos. 18 and 20	6.40c. to 6.65c.
Nos. 22 and 24	6.55c. to 6.80c.
No. 26	6.70c. to 6.95c.
No. 27	6.95c. to 7.20c.
No. 28	7.00c. to 7.25c.
No. 30	7.50c. to 7.75c.

No. 28, 36 in. wide, 20c. higher.

Corrugated Roofing, Galvanized

2½ in. corrugations, 10c. per 100 lb. over flat sheets.

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per lb.
Bright basic	5.25c.
Annealed soft	5.25c.
Galvanized annealed	6.00c.
Coppered basic	6.00c.
Tinned soft bessemer	7.25c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE	
High Brass Sheet	29c. to 30.75c.
High Brass Wire	29c. to 30.75c.
Brass Rod	28c. to 29.75c.
Brass Tube	44¼c.

Copper Sheets

Sheet copper, hot rolled, 16 oz., 33½c. to 36c. per lb. base.

Cold rolled, 14 oz. and heavier, 1c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14x20		
	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Primes	Wasters
			80 lb. ..	$8.35	$8.10
			90 lb. ..	8.45	8.20
			100 lb. ..	8.55	8.30
IC	$11.30	$10.05	IC ..	8.80	8.55
IX	13.50	12.00	IX ..	10.00	9.75
IXX	15.25	13.75	IXX ..	10.95	10.70
IXXX	17.00	15.50	IXXX ..	11.90	11.65
IXXXX	18.75	17.25	IXXXX ..	12.85	12.60

Terne Plates

8-lb. Coating 14x20

100 lb.	$8.50
IC	8.65
IX	9.65
Fire door stock	11.75

Tin

Straits pig	72c. to 74c.
Bar	80c. to 85c.
American pig, 99 per cent	70c. to 72c.

Copper

Lake Ingot	26c.
Electrolytic	24c. to 25c.
Casting	24c. to 25c.

Spelter and Sheet Zinc

Western spelter	8½c. to 9c.
Sheet zinc, No. 9 base, casks	12c.; open 12½c.

Lead and Solder*

American pig lead	6½c. to 7c.
Bar lead	7½c. to 8½c.
Solder ½ and ½ guaranteed	45c.
No. 1 solder	40c.
Refined solder	34c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb	90c.
Commercial grade, per lb	50c.

Antimony

Asiatic	9c. to 10c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb	35c. to 37c.

Old Metals

The market is quiet. Dealers' buying prices are nominally as follows:

	Cents Per lb.
Copper, heavy and crucible	17.00
Copper, heavy and wire	16.00
Copper, light and bottoms	14.00
Brass, heavy	10.50
Brass, light	7.50
Heavy machine composition	15.50
No. 1 yellow rod brass turnings	10.00
No. 1 red brass or composition turnings	11.50
Lead, heavy	4.75
Lead, tea	3.75
Zinc	5.00